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Audubon MAGAZINE

Volume 51
Number 3

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DISCOVER YOUR OWN

WALDEN

By Paul F. Runge



IF ever you become fed up with the world, and your own lot in particular, don't despair. Over 100 years ago a prescription was written for exactly what ails you. The prescription is recorded in Henry David Thoreau's, *Walden*. This book presumably is a report of happenings at Walden Pond near Concord, Massachusetts; but actually it is an account of the finding of peace of mind.

*All trees, all grass, all flowers taught Thoreau something.
Ox-eye daisies photographed by Helen G. Cruickshank.*





Our country's landscape is dotted with ponds and lakes, like gems dropped from out of a star-studded sky. Photograph by Clifford Matteson.

Our country's landscape is dotted with ponds and lakes. Like gems dropped from out of a star-studded sky, they offer their invitation and panacea to you. One of them may be your Walden, if you'll seek it out. Whether it is large or small, natural or man-made isn't important. It may offer the same "cure" the original offered Thoreau, where he found so much inner serenity.

Disturbed by what he considered a complex world, Thoreau sought Walden where he could find his own answers in simplicity of living.

"I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could learn what it had to teach," he reports of his experiment.

A nonconformist, he had concluded that "the mass of men lead lives of quiet desperation. Despair is concealed even under what are called games and amusements. Most men are so occupied with factitious cares and superfluously coarse labors of life, that its finer fruits cannot be plucked by them."

In 1845 he built his house on the shores of his Walden. He found himself a neighbor to the birds, to the trees and to his pond. He wasn't running away. He wasn't breaking with society. He was trying another way to find the answers to the problems that troubled him. He wasn't concerned with earth's harvest, but with the harvest of truths.



Thoreau said, "There can be no very black melancholy to him who lives in the midst of Nature with his senses still . . ." Photograph by John H. Gerard.



At Walden, "I grew like corn in the night." Photograph by the author.

Nature constantly reminded him that life for most people was being "frittered away by detail." He discovered that a basic ingredient of his prescription was "simplicity, simplicity, simplicity." He reduced living to the "necessaries of life."

He watched over his dominion. He listened to the sermons it had to offer. He observed the ducks, the loons, the turtles, the fish. He reported with joy the breaking of the ice on the pond that first spring.

All creatures, all trees, all grass, all flowers taught him something and he eagerly sought them. Yet as much as these had for him, his ponds—Walden and others—offered even more.

He reported with joy the breaking of the ice on the pond that first spring. Photograph by Clifford Matteson.



" . . . I minded not how the hours went. If the birds and flowers had tried me by their standards, I should not have been found wanting . . ." Great blue heron photographed by Hobart V. Roberts.



"Ponds are great crystals on the surface of the earth," he said. "Lakes of light. If they were congealed and small enough to be clutched they would be carried off like precious stones; but being liquid and ample, secured to us and our successors, forever, we disregard them. How much more beautiful than our lives, how much more transparent than our characters. Nature has no human inhabitant who appreciates her. Talk of heaven! Ye disgrace earth!"

For two years, two months and two days, Thoreau lived at his Walden. Far from being a hermit, he had visitors often and he regularly sought the society of men in Concord. Their gossip he "found as refreshing as the rustle of the leaves and the peeping of frogs."

He didn't urge everyone to live exactly as he did. "I would have each one

*"... We need . . .
to wade sometimes in
marshes, to walk the
forest and meadows."*
Photograph by Allan D.
Cruikshank.

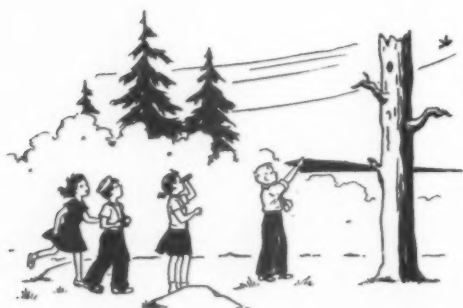


be very careful to find and pursue his own way. I would not have any one adopt my mode of living exactly as it was on any account," he says.

He only urged and challenged everyone to become the Columbus of his soul, to find his own answers, to seek Truth.

The experiment convinced him that, "if one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in the common hours."

In September, 1847, he ended his experiment. He was convinced that "we can never have too much of nature. We need the tonic of the wildness, to wade sometimes in the marshes, to walk the forest and meadows." The philosophy that mellowed during the experiment and recorded in the book "Walden" has become a classic remedy in the modern world for all who will heed it.



SEE WH

By Samuel A. Thorn

Drawings by Sally Ta



The
weel
leave
for

Photo

WHAT I FOUND!

**You can help children find
nature—even in a big city**

IT is Monday morning in grade school. Down the hall comes the sound of small feet, zestfully impatient, and a youngster explodes into full view as he rounds the corner. "Do you know what!" is his introduction to the story of his week-end discovery in the world of nature—discoveries that have left him wriggling with delight and hungry for more.

Another child gives you no warning of approach. Indeed you thought yourself quite alone in the room until, "See what I found!" is gently voiced, and your attention is directed to some object found on a week-end ramble. She is afire—but quietly—with the satisfaction of having discovered something new all on her own.

These are samples of Monday's pre-class greetings given to the teacher who helps them with their nature studies—studies which go on when school has been forgotten.

The study of nature is not restricted to older children. In our four-year-old kindergarten a child may bring part of a plant to school and say, "Gamma has a lot of this and we want to know its name." Other examples of young curiosity and interest may occur in all classes throughout grade school. It is a pleasure for me to help these children. With the joy it brings I cannot for the life of me see why any teacher hesitates to use the study of nature to the hilt. Sometimes I find teachers who are afraid of natural

The child's delightful week-end discoveries leave him hungering for more.

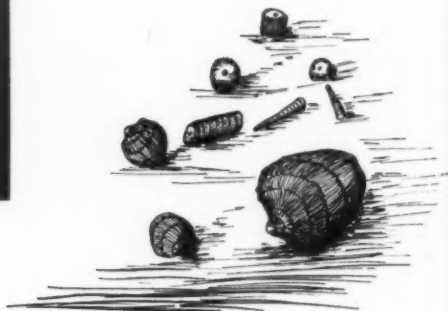
Photograph by Gene Heil

Nature operates a laboratory all around us in spite of the city. Children looking at scarlet cup, an early spring fungus, photographed by Hal H. Harrison.





A child discovers animals of the past. A trilobite, three clamlike brachiopods and wheel-like pieces of sea lily. Photograph and drawings by the author.



history. They need not be for children are wonderful at helping the teacher help herself. Every community has rich resources for help if teacher will but tap them. Teachers fear making mistakes and therefore avoid a subject in which they may lack knowledge, but in so doing, make the greatest and most serious mistake of all. They also cheat themselves of a kind of pleasure which they may not find elsewhere.

Although our schoolroom is in a large city (Milwaukee, Wisconsin) we try not to let that be a handicap. Nature operates a laboratory all around us in spite of the city. Once you awaken the children to nature they become constantly aware of it and you find them so responsive that you can scarcely keep up with them yourself.

A mere stone may lead to fascinating explorations. A second grade child found a stone in his backyard: "I've got a 'water' rock that has some little wheels in it," he said.

"How do you know it is a 'water' rock?" I asked.

"Because," and he lifted the stone close to my eyes, "I can see the layers in it." And then he showed me the "little wheels" also.

Sure enough. He was right. I sprang one of their own magic phrases on them, "Say! Do you know what?" Instantly all eyes were on the specimen, with every one wanting his own private look. "This wheel is part of a fellow which used to be alive millions and millions of years ago. How do you suppose he ever got into this rock?"

Several were ready to venture an answer but the finder took first chance: "This is a water rock and used to be just mud-stuff down under the water."

"Yes. But what has that got to do with this fellow in this rock?"

"He was alive in the water. When he died he sank down into the mud. Then some more mud covered him over. When it all hardened into rock the marks of his body had to be right in the rock. And I found that part of the rock."

By this time the specimen had gone part way around the class and questions were popping. One child said, "If this is only part of that fellow, how did he look when he was all together?" It took but a short time to build up the idea of "about" how he must have looked.

These ideas were given reinforcement when I brought into our room a preserved specimen borrowed from the college department. It was then much easier to see why this creature is often called a "sea lily." "I know a place about a mile and a half from here," I told the class, "where there is layer after layer of this rock that used to be mud down under the water."

"Are there sea lilies in it?"

"Yes," I replied. "I found some pieces of sea lilies when I was there last week. Would you like to go there to see if you could find some?"

The answer was a vigorous "Yes, yes!"

The question, "How are we going to get there?" was nicely solved. The room teacher sent notes home to the parents

and in a day or two our caravan of cars was arranged. At one o'clock of the appointed day, mothers and fathers deposited us on the flat surface of the fossil beds at the edge of the river.

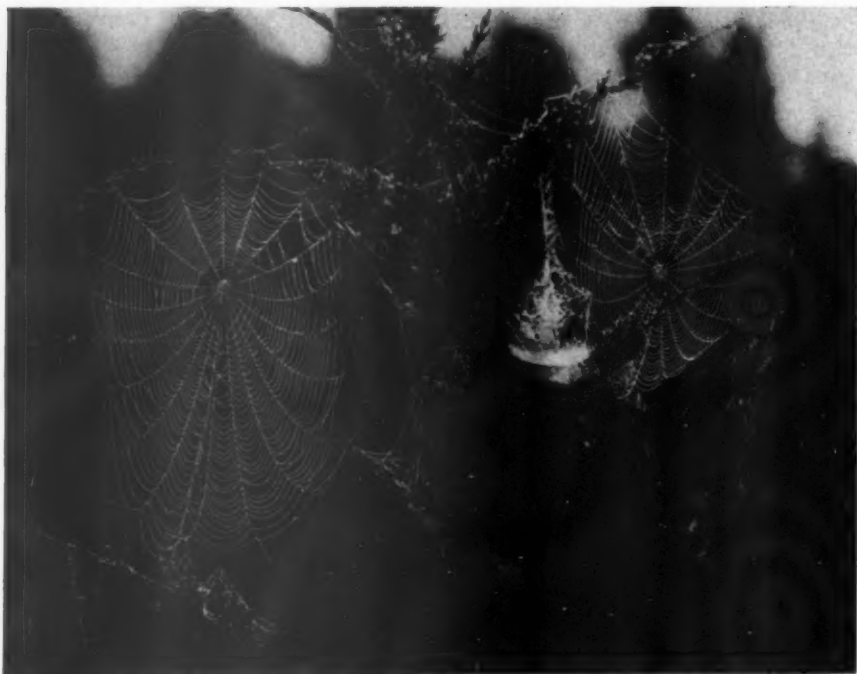
By this time, the children understood about the tools that were needed to make the rocks give up their treasures of the ages. We had hammers, picks and spikes of all descriptions. My hammer and chisel loosened a "pancake" of rock eighteen inches across and two inches thick in the center. It tapered off to thin edges. As I turned it over the sunshine caught it just right to reveal the shell markings.

"Oh, boy!" broke in a child, "just like little clam shells with a lot of ridges on them!"



The child who discovers such common creatures as gray squirrels and blue jays in our city parks will learn by observation that animals which bury acorns or nuts help to replant our forests. Photograph at the right by Alexander Sprunt, Jr.; below, a family of blue-headed vireos photographed by Hal H. Harrison.





"Yes. These fellows had two shells like this," and I cupped my hands to demonstrate, "and are called brachiopods. I'll bet some of you will beat me and find one that shows both shells." With that encouragement, they were off on their own. Those who had forgotten to bring tools were exploring among the loose rock flakes or using one stone to dislodge another. I was soon mobbed by the repeated question: "Is this one? Is this one?" And each time I answered, "Yes, you have a brachiopod," or "Yes, that shows me you know what a brachiopod looks like." In a few minutes they had heard the word so much they were using it themselves.

By the time the cars were ready to take us back to school we had found sea lily disks, brachiopods, bryozoans ("little checker-boards"), cephalopods, iron nodules and geodes filled with calcium crystals.

He said in that kind of voice that comes from the depths of a boy. "My goodness! . . . I didn't suppose there were so many spiders in all the world . . ." Photograph by Hugh Spencer.



At one time, as I held up a brachiopod, I asked, "If we had been here when this fellow was alive, in what do you think we would have been standing?"

"Mud—feet of it, most likely with feet and feet of water on top of that," explained the children.

One child questioned, "Why isn't that water all here now?"

My question followed, "What do you think would have happened to that water if the ground under it had been

very slowly pushed up and up for hundreds and hundreds of years?"

One answered, "After a long while it would have been higher than the water and the water would have to spill off and run away."

Another ventured, "That must have been what did happen because there isn't any water here now except the river. And it isn't very big, and the water in it is running away as fast as it can."

A few days later, when I sat down with the second grade class in the magic circle where we answer many questions and always try to arouse more, a lad put a triangular slab of limestone (about as heavy as he could carry) into my hands. In it was the largest trilobite I have seen in many a day. "Where in the world did you get this, young man?"

"Dad and I were using these flat rocks to build a sidewalk last Saturday. When I saw this in the stone I wouldn't let him use it in the walk. So he broke this piece off and let me bring it to school. He wants to know what it is."

"It's a trilobite," I said before I had time to think what the best teaching tactics would have been. Then followed all the normal questions, till we discovered what we could from the evidence dwelling in the stone.

No matter what the season, our city laboratory never fails to yield up some wonderful project. The wingless female moth of the fall canker worm emerges after all other insects have been "frosted to sleep" for the year. We find them on the trees of the streets. The witch hazel's late blooming, and habit of seed dispersal, have given us more to wonder about as to the true meaning of fall and spring. The ways of wasps challenge us: the mud-dauber and the paper nest wasp—the finder of the mud jug of the jug-wasp has been the envy of the rest of us many times.

Cocoons are always treasures, but most treasured of all is the tiny cocoon of the lacewing fly. We find it, a tiny pearl,

hidden in bark crevices or neatly placed, nearly out of sight, in the dimpled end of the thorn apple. And when she emerges the lacewing shows us wing etchings to arouse our minds to new flights of fancy.

Crude rubber, from milkweed sap, is made between the tips of the thumb and forefinger. When grass plots are covered with snow, we go on mouse hunts. Boys and girls "bring them back alive" after catching them in their bare hands. They learn what damage these creatures do to shrubs and therefore can see what they also will do to orchards and field crops. Then we discuss the need for more owls and hawks to control the rodents.

On trips to the lagoon and to Lake Michigan we study the many kinds of wild waterfowl that visit us each season. We learn how to look through one of their feathers at the very tiniest shaft of a sunbeam and see the light broken up into wonderful rainbows. Likewise, Lake Michigan's shore line has given us a place to go for a "blizzard hike," something for the hardy, dressed in warm rugged clothes. There you may hear the boom of miles of crashing waves whipped by merciless winds, sleets and snows. As we have watched in silence I have felt children (through the clasp of their hands) shudder; not through cold or fear but through being charged by the measureless, matchless majesty; the movement, flow, energy, force and power of it all. And in the calm and sunshine of the next day we have gone back to find crystalline ice flung to the tops of the trees, reflecting the prised sunshine until we are lost in an endless eternity of it and wanted to learn more about the ways of light and color.

Our pet frogs, snakes and turtles have been successfully hibernated in a pit two feet square and two feet deep. The pit was dug in a well-drained location and then covered with a great mound of dry leaves. When the parents of one of my pupils asked their daughter why there

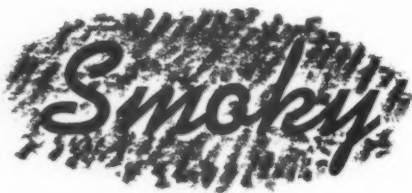


were clay marks on her coat she replied: "I was just helping the nature teacher hibernate."

Like many others, I band birds. A school next to us kindly lets me use their woodlot. The traps have to be looked at in the morning, before school; at noon; at four o'clock in the afternoon and again at dusk. Several children of the neighborhood usually go along to help put the birds into the carrying cages which they do with as much ease as an adult. It is a wonderful way for them to learn to identify the birds.

We see countless other things on these bird trips. One sunny morning that grew out of a foggy night a lad trapped with

me. Spiders had festooned every branch, twig and blade of grass until it seemed no mooring spot had been left unused. Each silken strand was dusted with silvery moisture left by the fog. Whenever strand joined strand in the forming of the intricate web-patterns a shimmering pearl was hanging full in the morning's fresh sunshine. Our bit of woods was silent, breathless; its spirit entered us. I heard a murmur; not for me—for Red himself, I think, did not know he had said, "My goodness! I did not suppose there could be so many spiders in all the world." Then he turned, and turned, and turned again; as though it were not to be believed. Then he said in



THE CATBIRD

By Charlotte Orr Gantz

Drawings by Sally Tate

SMOKY was responsible for a complete upset in our views on birds—and a thorough job he did of it. Until his advent, we supposed that tame birds were something attainable only by raising fledglings, an undertaking which would scare me almost as much as trying to raise a baby without benefit of doctor. Anyway, I thought you had to have infinite patience and a very special gift with animals which I didn't pretend to have. I should never have had the nerve to offer my friendship to Smoky if he had not taken the initiative in adopting us.

One Sunday early in August, Bob (my husband) and I were standing under the silver maple in our yard when we suddenly became conscious of being stared at. Looking up, we discovered a young catbird just above our heads. We said, "Hello," but he merely looked at us solemnly without moving.

Presently, I went over to the garden to gather

tomatoes. To my surprise the catbird followed, alighting on a tomato stake a few feet away. No bird had ever before shown such confidence in me, and I was flattered. Bob ran in for the camera and Smoky and I gazed at each other in silence under the blazing Virginia sun. The picture taken, I hurried for the shade—the tomatoes

in my arms—and again the catbird flew after me—this time trying to alight on the tomatoes themselves, but becoming wary and swerving just before he got there.

I put a small, very ripe tomato on the ground and he flew right to it but couldn't break the skin. As I bent to break it in two,

he backed off and opened his beak wide in a highly comical fashion—half defiant, half pathetic, as if to remind us he was only recently from the nest where food was put down his throat.

He fell upon the open tomato ravenously. We



that kind of a voice that comes out of the depths of a boy, "No one could have told me this. I couldn't read it from a book. It couldn't be put in a picture. The only way you can get the idea is to be here, you just have to see it for yourself."

In that moment, I was more grateful than ever that someone had left a bit of the woods in the heart of a great city. This boy was having a chance to read from nature's own book in her great school of the out-of-doors and the love born of such experiences is the safest foundation for wise and thoughtful conservation.

These and hundreds of things more

show that even a city can be a veritable nature resort—a nature camp. Children are learning lots of facts. Better still they are learning the delights of discovering for themselves and learning the joy of doing things. They are learning that no matter how barren of life their surroundings may seem they still offer worlds to be discovered, and that these discoveries carry joy, beauty and lasting satisfaction. In making this world of nature his own discovery, the child learns the nobility, dignity and majesty of simple things and reaps the joy of walking with humble courage among them.

watched while he finished it, then gave him a second one and went inside, assuming that, like other wild things, he would prefer to eat by himself. Not at all! As soon as we left, Smoky flew up to the silver maple but the moment I returned he came right down again and went happily to work at his feast.

"If you want a nursemaid," I said, "just let me get some work to do." Smoky flew up into the tree while I collected my pen and stationery, but he came down again when I had settled myself on the bench. Half of the second tomato went the way of the first, and I wrote most of a letter. Then Bob put the remaining half of the tomato on the bench beside me. Smoky watched, then approached very cautiously, mouth wide open and feathers fluffed as if threatening me with the worst, should I move. I paid no attention but went on writing, and after a few minutes he hauled down his feathers, closed his beak and got to work. He worried the tomato until it turned upside down. Righting it for him, I held it steady.

The tomato finished, Smoky fluttered down to my shoe and began tugging at the laces. Then he tried my bare leg, but could get no foothold. Getting bolder, he lit on my arm; then fluttered to the paper on my lap and walked over it carefully as if studying what I had written.

Bob and I watched, thoroughly entranced,

until Smoky decided he'd had enough of us and flew to a tree some distance down the lawn. This was a steadier flight than any made before he'd been fed and we congratulated ourselves on having provided food at the right time.

Our lawn became his base for operations, and he was known as my bird. He always returned

to the silver maple at night. Of his past, we gleaned a little from questions around the neighborhood. He had been hatched two lawns down and had unquestionably been turned out of the nest at too early an age. For some weeks, the people there scattered food for him but they never had tried to get near him. When strong enough, he moved to other fields and apparently foraged for himself until he selected us as his foster parents.

We took our new responsibilities very seriously. I worried because Smoky confined himself to tomatoes and wild cherries and this seemed too liquid and acid a diet. Bob, on the other hand, was concerned over his refusal to drink water. Smoky never went near the bird bath and couldn't be coaxed into drinking, even when we put water into a scooped-out tomato.

Our worries were unnecessary, for Smoky seemed to thrive. However, I worried as all good parents do—even foster ones—and tried to get him to take some bread and milk. To my amusement, he turned down the nicely moist-



Continued on page 198



[This is the first of two articles in which the author tells the fascinating story of almost 25 years of owl research.]

WHOO

By Lewis Wayne Walker

"A wise old owl sat on an oak
The more he looked the less he spoke . . ."
Numerous people passed below
Much about him they did not know.

THUS by changing the last two lines, this famous quatrain can be brought up to date, for it is doubtful if there is any one family of birds as generally misunderstood as the owls. Some of their common names are definitely misleading. Screech owls, for example, never screech. They utter plaintive, quavering whistles and occasional sharp barks when disturbed. Burrowing owls never dig their own holes. They usurp dens originally excavated by small mammals. Even the long- and short-eared owls—so-called because tufts of feathers protrude from the tops of their heads—are misnamed; the tufts are a long way from the ears which are situated near the base of the beaks.

The common expression, "dumb as an owl," falsely implies that owls are witless and was no doubt based on their habit of sleeping in the daytime.

"Blind as an owl" is another misleading statement for in reality owls are endowed with highly specialized eyes which permit vision in almost any degree of light, although most of them seem to prefer twilight for greatest activity. Perhaps through the eons of evolution they have been forced to stay hidden until darkness by the aggressive, but ineffectual at-



The barn owl has adapted itself to civilization.

ON THE NIGHT SHIFT

Photographs by the author

tacks of kingbirds, mockingbirds and jays. Perhaps the fact that rodent and insect prey is largely nocturnal has an important bearing on the owl tribes' adaptation to the night shift.

Owls of different kinds vary greatly in size and in a single species the female is the larger and possesses the deeper voice. The elf owl, smallest of the family, hides in woodpecker holes which dot the giant cactus of Arizona, and to many people it seems incredible that this sparrow-sized bird is a member of the night-flying clan. By contrast, owls of the far north stand almost two feet tall. Various others form intermediate links between the extremes of size, each especially suited for survival in its chosen habitat.

MOST species have been forced to retreat by the advance of civilization and are now resident far from "trigger-happy" humans. An exception is the barn or monkey-faced owl which seems to have increased its range in the last century. Nests are often reported within the limits of large cities and if undisturbed will be occupied season after season. A few nests have records of uninterrupted tenancy for over 50 years. Dan Beard, the founder of the Boy Scouts and father of Dan Beard of the Fish and Wildlife Service, discovered a nest in 1880 in a church belfry at Flushing, Long Island, which became the site of my first owl study just 46 years later.

The occupants of this nest, for several

months my intimate companions, were no doubt very different from the pair originally observed by the Boy Scout leader, but by a chain of alternating mates the nest had been perpetuated well into the 20th Century. There have been times since that spring of 1926 when I have looked back on some of my hardships and almost regretted the fact that Dan Beard started me off on this peculiar hobby that has prompted me to delve into the night life of most of the owls found in the United States. In other moods, enjoying the comforts of civilization and looking back on the pleasures of owl-study, I realize that some of my observations may have supplied material aid in much-needed owl protection. Then I can't help but thank that grand Old Scout for directing me toward research on nocturnal birds of prey, a neglected but important part of wildlife conservation.

My initial study at the Flushing nest entailed nightly watches of four hours each—from the time the first egg was laid until the last young one left the nest—96 nights in all. During this vigil many interesting facts were revealed about the species, and the owls, no doubt, absorbed some knowledge of the ways of a human being.

One night in particular remains vivid in my mind. Seconds after setting off an extremely large and noisy charge of photographic flash powder, I heard the sirens of fire engines as they neared the



Barn owls sometimes nest in buildings within large cities; a few nesting sites have had uninterrupted tenancy for more than 50 years.

church. As the acrid smoke from my flash poured from cracks in the board siding I heard the splintering of wood from below and the creak of stairs as men raced to the tower. I spent the next 20 minutes trying to prove to a score of bewildered policemen and firemen that I was not an arsonist with a hatred of churches, but a naturalist who, of his own free will, preferred to spend his nights in a church tower. That midnight explosion cost me the price of the door which the firemen had hacked to pieces to gain entrance, but it also brought me the friendship and protection of a "cop" with ornithological leanings. Throughout the remainder of the study he was a constant visitor and told me of the numerous telephone complaints which he squashed before investigations could be started.

During my period of observation of the barn owl nest, I counted 786 animals

brought to the nestlings. They were as follows: 374 field mice, 346 Norway rats, 23 house mice, 10 short-tailed shrews, 3 deer mice, one wren and one sparrow. This nightly average of about eight animals did not include any prey delivered during my absence from the nest nor did it include that eaten by the adults for their own sustenance. No doubt it would be safe to assume that the combined appetites of the two parents accounted for an additional eight rodents per night.

Strange fluctuations in nightly catches showed that the hunting success of barn owls is affected by weather. During dry periods the nightly catch rose far above average; when there were two or three days of rain the catch dropped to a starvation level. The highest catch for one evening of hunting consisted of 17 field mice, nine Norway rats and one house mouse. In contrast to this bounty-

ful repast there were a few nights when the catch dropped to three small rodents—a meager ration for a nest that started with 11 young. This small catch occurred when thunder shook the building and the area was drenched with rain.

A gruesome outgrowth of this effect of weather was cannibalism. The eggs, laid at two-day intervals, hatched in the same rotation after a 33-day incubation period. As a result, the eldest of the young was the senior of the youngest by several weeks and any prolonged food shortage brought about the disappearance of an infant and a corresponding size increase of the oldest fledgling. Only eight of the original 11 chicks survived the two-month period of growth required to reach a flying age.

Although the majority of barn owls follow the modern trend and place their



The author watched one pair of barn owls bring 374 field mice, 346 Norway rats, 23 house mice, 10 short-tailed shrews, 3 deer mice, one wren and one sparrow to the nestlings.





The long-eared owl usually rears its young in the abandoned tree-nest of a crow, a hawk, or another owl.



The young long-eared owls grow to full-sized owlets on 40 go

ests in buildings, you can still find them in wilderness areas where they reside in almost any type of cavity that affords protection. In the arid stretches of Lower California they often use a niche in a vertical dirt bank. In more verdant territories they occasionally select a hollow tree if the site meets the chief requirement for a nest—that of excluding light.

In southern California where a variety of nesting sites are used, recent barn owl studies show that size of nest seems to control size of brood. Small tree nests rarely have more than three or four eggs; in big caves the owls usually lay double that number. If overcrowding occurs, cannibalism soon reduces the family to fit the nest, one of nature's ef-

ficient and economic checks on the increase of a species.

THE long-eared owl, a bird of about the same size as the barn owl, has entirely different nesting preferences and usually rears its young in the abandoned tree-nest of another bird. These long-ears are the clowns of the owl clan, actors with an endless repertoire of deceptive tricks running from comedy to tragedy.

A few years ago I visited an oak where a pair of Cooper's hawks had nested for many years but instead of their usual cackling, "Ca-ca-ca-ca!" I heard a low moan that rose with constantly changing pitch until it resembled a fight of angry bobcats. As I waited the noise subsided, then a long-eared owl's flashing orange



phers, 23 pocket mice, 10 wood rats and nine other rodents.

Long-eared owls are the clowns of their tribe, actors with an endless repertoire of deceptive tricks running from comedy to tragedy.

eyes peered stealthily over the rim of the nest. A few moments later I climbed an adjoining tree and watched the single parent with the ventriloquial voice as she put on a display which I have never seen excelled in the wild. With raised feathers and extended wings she assumed proportions that would have frightened most intruders into a hasty retreat.

The tree from which I watched was ideal for a photographic blind and while a platform was being constructed the birds reversed their tactics and tried to become secretive. One, perching on a broken branch, followed each movement that I made through eyelids closed to mere slits. Clamping every feather to its body it assumed a sticklike appearance and the feather tufts were raised

to their utmost height creating an illusion startlingly like a broken log—even to the jagged splinters that might protrude from the top. The normal coloration of this owl matches the bark, so with an erect stance to further heighten the protective mimicry, this pair had everything—combined with a dramatic sense of timing which enhanced the effectiveness of each act.

By dusk the blind was completed. As a few flashbulb reflectors were being hoisted to my perch one of the owls went through a routine that topped all others. Fifty feet away the grass tips wiggled violently and from them came a series of squeaks closely resembling cries made by a small mammal in distress. Brown wing tips trembled above the



In defense of her young the female (below) assumed a pose so fierce as to frighten most intruders away.



swaying blades and the commotion continued until I reached the ground and headed in the direction of the disturbance. While still a few yards away the bird flew into the air, skirted the growth and dropped, to repeat this fight with a mock adversary. Each time she took pains to land in an open clearing and each short flight drew me farther from the nest. With darkness rapidly settling I pointed the beam of a flashlight in her direction and that seemed her cue to change character and to feign an imaginary injury.

Injury pantomimes are not unusual with birds and are often used by quail, killdeer and ducks to lure enemies away from nests or young. Performed by a nocturnal predator, it was completely unexpected and incongruous. The long-eared owl's actions under the flash beam proved beyond doubt that it was solely for my benefit. With feebly flapping wings she pushed herself along on one side. If I followed at a respectful distance she was content to lead, but when I turned toward the nest she would fly in a circle and re-align in the illuminated area. If I moved the light beam away from her, she moved back into its light, her every action intimating helplessness, combined with brazen exhibitionism to lure me on.

I spent about 19 half-nights of about six hours each hidden within this blind. The young long-eared owls grew from fluffy, shapeless balls of down, about the size of chicks, to full-sized owlets on a diet which included 40 gophers, 23 pocket mice, 10 wood rats and nine other rodents, but not one bird. During this time the parents learned to tolerate my presence within the blind, but dared me to leave the enclosure after dark. Each evening at midnight as I walked to the car I endured a barrage of stoops as the adults harried me on my way with a diving attack, their sharp talons often drawing blood.

[To be concluded in the next issue in which the author will tell of his experiences with screech, elf and great-horned owls.]

★ NATURE ★ IN THE NEWS

Insecticides and Wildlife

In AUDUBON MAGAZINE (May-June 1948) Richard H. Pough wrote, "It seems quite apparent that DDT is to be used on a larger scale this coming summer than ever before. To date no one knows what the effect of its widespread use is going to be on birds and other wildlife."

Through the generous assistance of a number of leading entomologists, the Society has since devoted several months to investigation of the impact of DDT and other new organic insecticides upon birds and other animals. The results were condensed in a news release issued by the Society, and reprinted in the March-April 1949 issue of Audubon Magazine. That statement, appearing in the press from coast to coast, led to constructive editorial comments on the situation and to "letters to editors" from recognized authorities, illustrated by the two following quotations:

• • •

Reprinted from the New York Times, May 2, 1949

Topics of The Times

Strange Lack of Concern

When one considers how quickly man has been known to rise to defend his feathered friends against harm, the recent warning by the National Audubon Society that the improper use of DDT and other powerful new insecticides is killing off birds, bees and other useful creatures at an appalling rate seems to have been received with surprisingly few expressions of concern. Several years ago Dr. C. H. Curran, curator of insects at the American Museum of Natural History, created a stir by saying that DDT employed carelessly might prove to be more devastating to man's economy than the atomic bomb. The Audubon people, after a year of tests, now submit findings indicating that Dr. Curran's observations may prove to be pretty close to the mark unless something is done to check the indiscriminate use of dichlorodiphenyl-trichloroethane. Curators of insects have a way of being quietly but disconcertingly correct in their estimates.

Excess of Zeal

The Audubon Society's experimenters found, for example, that after a test area in Texas was dusted over-generously with DDT the bird

Continued on Page 202

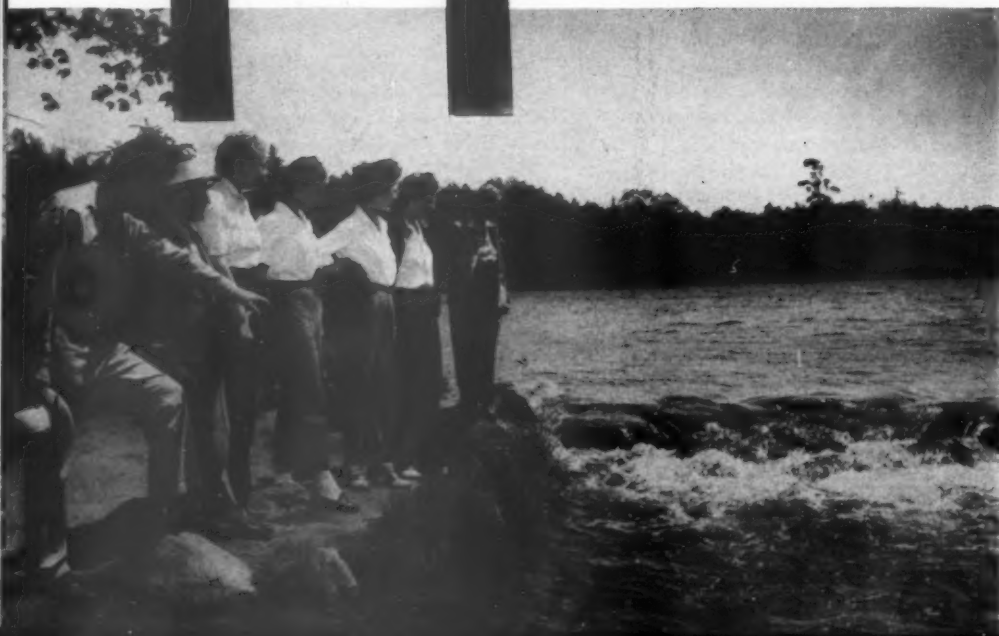
LAND OF *Sky Blue Water*

By Mathilde Henkel

**Itasca State Park — a
haven for wildlife and
a delight to all visitors.**



Audubon Wildlife Tour guide Kenneth Morrison points to the clear, unspoiled waters of Lake Itasca, source of the Mississippi River. Photograph at left courtesy of Minnesota Department of Conservation; below, courtesy of *Minneapolis Star and Tribune*.





The vacationist in Itasca Park has a splendid opportunity to see the animals and plants of a northern coniferous forest. White-tailed deer browse not far from the woodland trails. Photograph by C. L. Broley.

IN the pine-clad hills of northern Minnesota lies Itasca State Park, a wild, unspoiled wooded area, dotted with innumerable lakes, ponds and marshes. Lake Itasca, largest lake in the park, has far-flung fame as the origin of the Mississippi River, a mere stream here as it begins its winding, turbulent journey southward to the Gulf of Mexico.

The vacationist who is also an outdoor enthusiast has an incomparable opportunity in Itasca Park to observe the animals and plants of a northern coniferous forest. The Minnesota Division of State Parks is rapidly developing a program which will give the visitor a better

understanding and appreciation of the outdoors. The trustees of this public domain feel that it is not only their obligation to preserve its beauty, natural features and wildlife, but also to make sure that the citizens, who own it, derive physical enjoyment, spiritual serenity and social understanding from its use.

The natural beauty of Itasca State Park depends much on its forests of pine and spruce which, unlike surrounding forests, are still uncut, and therefore unspoiled. The park roads wind through groves of both red and white pine and trails lead through extensive stands of jack pine, which reach their maximum

size here. Balsam trees spice the air with their fragrance and the dark green spires of arrow-headed spruces reach for the sky. White birches glisten in the sun and the rustle of aspen leaves mingles with the murmur of the pines. The flame-throated Blackburnian warbler haunts the tallest pines and far below on the forest floor the ovenbird pours out a crescendo. In the cool dark tamarack bog the Connecticut warbler builds its nest in the sphagnum mosses, amidst Labrador tea and the rare pink and white lady's slipper.

For people interested in wildlife and natural beauty no park has better physical features than Itasca. A woodland road circles the park from which 28 lakes and ponds can be viewed before returning to Douglas Lodge. Forty-two miles of trails lead to marshes, bogs, and deeply hidden lakes. The State Park Division in cooperation with the Minnesota Museum of Natural History pro-

The group stops in "Preacher's Grove," a famous stand of virgin Norway pines; some are more than 200 years old. Created in 1891, Itasca Park was one of the first state parks in America. Photograph courtesy of *Minneapolis Star and Tribune*.



The big, red-crested pileated woodpecker, photographed by M. H. Oldham, is a shy bird, seen only along the deeply wooded trails.

vides many opportunities for visitors to learn the natural history of this area. The park naturalist conducts two-hour trail trips several times a week to acquaint groups with the varied plant and animal life in the park. Motion pictures of outdoor subjects are shown and talks are given by the naturalist or other authority in the evenings. A well-labeled self-guiding nature trail, "The Dr. Thomas Sadler Roberts," (named for Minnesota's famed ornithologist) was opened two years ago. Signs along the trail identify flowers, trees, birds' nests and other natural objects.

The park museum has interesting educational exhibits depicting the natural history of the region. The University of



In the park lookout tower, a Minnesota forest ranger shows an Audubon Wildlife tourist how he spots a forest fire. Photograph courtesy of Minneapolis Star and Tribune.

Minnesota maintains a forestry school and a biological station, using the entire 32,000 acres of the park as its laboratory.

In 1947 the Audubon Wildlife Tours, conducted by station wagon six days a week, were begun under the enthusiastic leadership of Kenneth Morrison. This is the only Wildlife Tour sponsored by the National Audubon Society in the interior United States. During July and August people with kindred spirits from many states wade the headwaters of the Mississippi and explore the Indian mounds at the northern end of the park or listen for the warning slap of a beaver's tail as they investigate the beaver lodge on Mary Lake. It is a delight to visitors when a white-tailed

deer is seen browsing at the edge of a woodland trail or a pileated woodpecker flies away before them into the deeper woods.

With information gained from the trail hikes and the Audubon Tours, the vacationist who is especially interested in birds will be able to seek out for himself some of the 147 species known to the park of which birds typical of the Canadian Zone are present in considerable numbers. A map may be obtained which not only shows the trails, lakes, and bogs but such search-provoking details as the "Osprey Nest," "Great Blue Heron Rookery" and "Porcupine Habitat."

Warblers are found everywhere. Of the 22 species that have been observed,

12 are typical of the Canadian Zone. Among the most common are the black-throated green, Nashville, mourning and chestnut-sided. The parula is to be seen in the tall pines along with the Blackburnian. Many of the warblers are breeding birds but the nests of the orange-crowned, Canada, black-throated blue and Tennessee have not yet been found in Itasca. It may be a challenge to an ambitious bird student to find the nests of these elusive birds. The songs of the common vireos are heard throughout the park but the curious double-noted song of the blue-headed vireo is heard only in a spruce or tamarack bog.

The Canada jay, so characteristic of the northern woods, may be seen along many of the trails. True to the reputation he acquired as "camp robber" in the lumber camp days, he is often lured



Resembling an oversized chickadee, the Canada jay likes to nest rather low in coniferous trees. The four grayish eggs are sometimes laid in February when temperatures are below zero. Photograph by Alfred M. Bailey.

Beavers, once so common in Itasca Park that their food supply dwindled, are now seen much less frequently. Photograph by Allan D. Cruickshank.



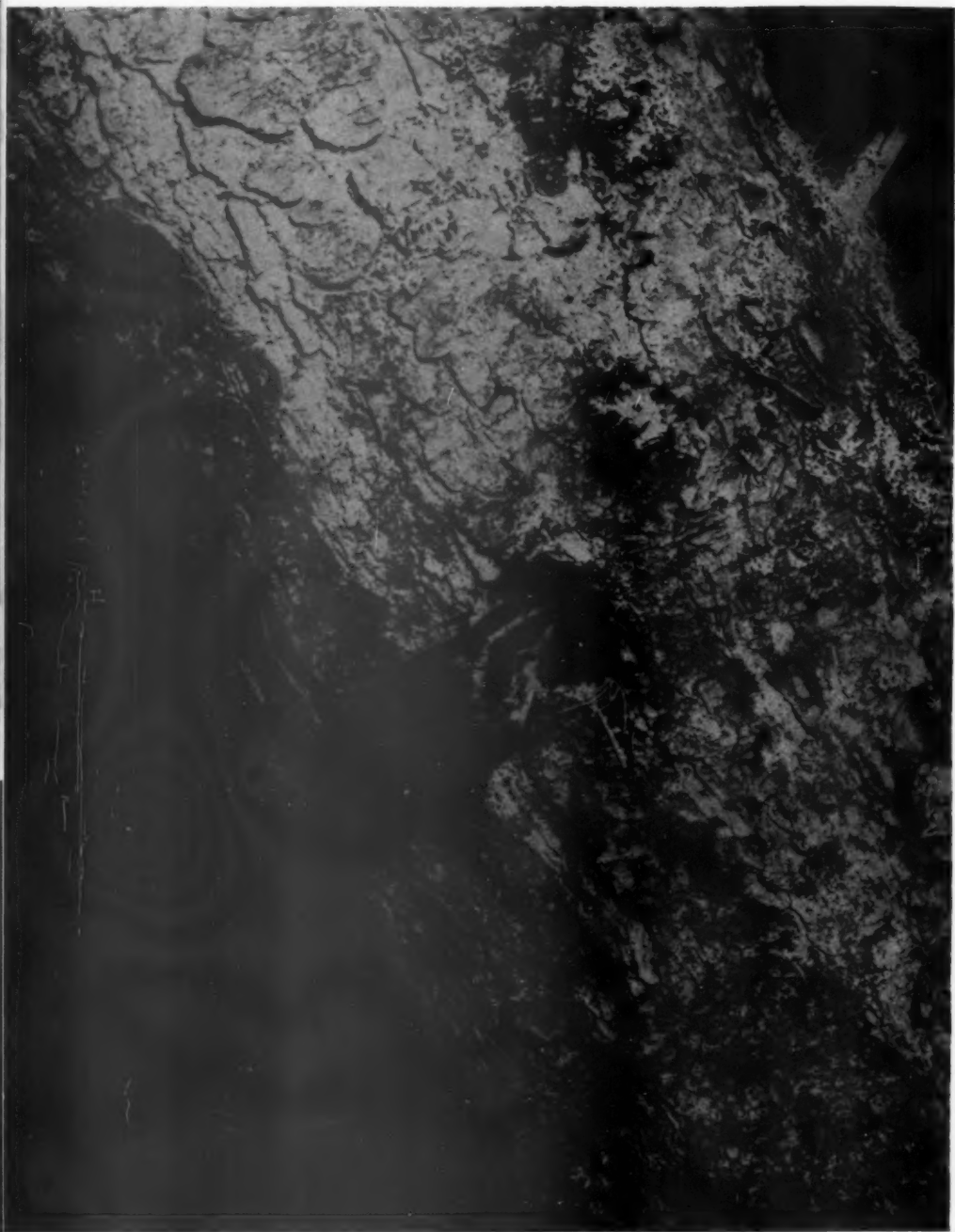
into the open with a crust of bread. The red-breasted nuthatch and junco are familiar; juncos are found on the more sequestered trails but some years they are everywhere, even on the university campus. If you move warily through the woods you may come on the flame-crested pileated woodpecker chiseling into the heart of a living pine that has been doomed by carpenter ants. These big forest woodpeckers are shy birds and will bound away at the slightest disturbance, showing their strikingly beautiful black and white wing patterns. For several years a pair nested in front of Douglas Lodge, but now the pileated is found only on deeply wooded trails.

The Arctic three-toed woodpecker is not common, but you can find an occasional bird along the LaSalle and Bohall Trails. Red crossbills and pine siskins are present in some years, yet cannot be found by even the most diligent searcher in other years. The purple finch is fairly common, particularly near the forestry school.

Early in the morning and in the hush of evening you can hear the beautiful hymn of the hermit thrush on every trail. The willow thrush likes the tangles of the Bohall Trail and occasionally the olive-backed remains to nest in a shrubby mountain maple. The tangled thickets of the LaSalle Springs are favorite places to see the white-throated sparrow and the Hudsonian chickadee. In mid-summer an abundance of red raspberries lures rose-breasted grosbeaks, scarlet tanagers, and cedar waxwings to the springs. At Squaw Lake at dusk,

From trail-hiking and the guidance of the Audubon Tours, vacationists learn to identify many of the 150 species of birds known to occur in the park. Photograph courtesy of Minneapolis Star and Tribune.





The red-breasted nuthatch, small, slate-blue and short-tailed, photographed here by Allan D. Cruickshank, is at home in Itasca's coniferous forests.



The "Old Timer's Cabin" occupies a scenic knoll in the shoreline of Lake Itasca, largest lake in Itasca Park. Photograph by Walter H. Wettschreck.

A vacation in the wilderness brings composure to nerves frayed by the stress of modern life. An Audubon Tourist from St. Paul devotes her attention to a young raccoon that was left motherless. Photograph courtesy of *Minneapolis Star and Tribune*.



you can hear the plaintive song of the whip-poor-will. Here in the protection of the gathering gloom, a doe brings her speckled fawn to the water's edge and from far out on the lake comes the forlorn wail of the loon.

Shore and water birds frequent all lakes and adjacent ponds and marshes. During July and August migratory shore birds are observed on the mud flats. Forest-loving ducks to be seen are the wood duck and golden-eye. The bald eagle and osprey are spotted by even the most casual of park visitors. The big high-soaring bald eagle for many years nested on the west shore of Lake Itasca. The spectacular plunges of the osprey after fish are always a thrilling sight. A vacation in the wilderness brings composure to nerves strained by the stress of modern life. When the visitor returns to civilization it is with the soothing memories of the song of the hermit thrush in the solitude of dimly-lit forest sanctuaries, of gentle-eyed deer browsing in pine-scented groves, of the eagle's majestic soaring over Minnesota's sky blue water.

**Our Beautiful
Western Birds**



HOUSE FINCH

The rosy look of a purple finch and the familiar ways of an English sparrow are blended here to form a bird known to nearly all westerners except those who live in the Northwest. Adaptable, the "linnets" are equally at home in the broad irrigated valleys, the cactus gardens of the desert, or the Spanish-style patios in the heart of town. In the cities and on the ranches they have successfully held their own against the westward flowing tide of drab English sparrows that, unlike the house finches, neither sing nor add a note of pleasing color to pay for their keep.

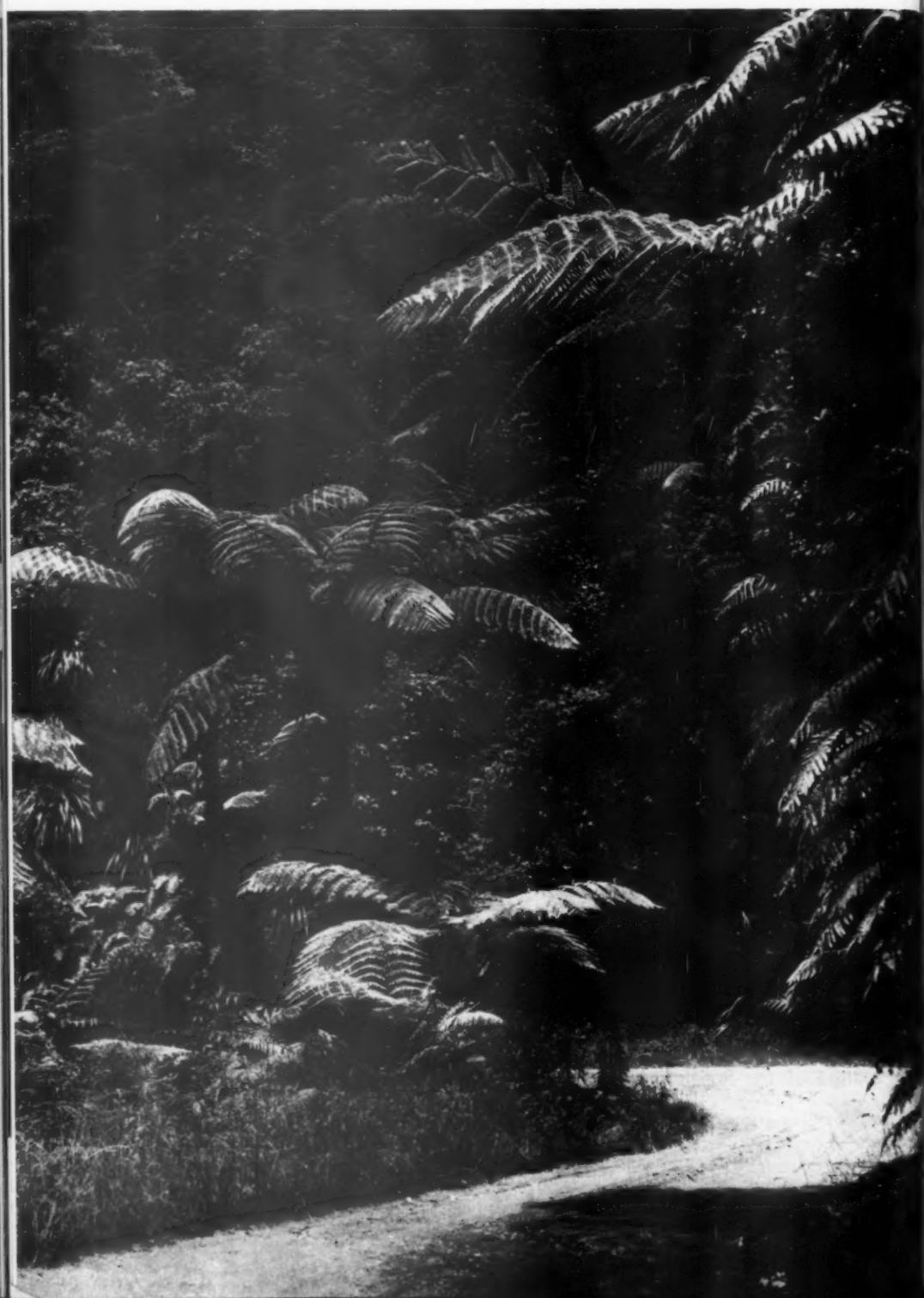


Painted by
Roger Tory
Peterson

GAMBEL'S WHITE-CROWNED SPARROW

Every garden and hedgerow in the West is visited at one time or another by some race of the white-crowned sparrow, the handsomest, most aristocratic-looking member of the drab tribe of sparrows. The alert bird shown here, perched on a spray of hollygrape, belongs to the subspecies known as Gambel's white-crowned sparrow. Sweeping southward from its summer home in Canada, it seems to be everywhere in the valleys of the Southwest during the winter months. Its plaintive wheezy lay comes from every thicket and even intrudes itself upon the sound track of many a Hollywood-made motion picture.

MAY-JUNE, 1949



NEW ZEALAND

a first impression

The author, famed American naturalist, sends Audubon Magazine readers this preliminary note from a country where he has spent some months as director of the scientific work of an expedition which seeks to make a complete biological survey of the Fiordland area.

By Olaus J. Murie

NEW ZEALAND! The name has a far-away, adventurous ring to it. After a speedy overseas air trip we landed at Auckland and looked about us eagerly. What would this city be like? The people? And what birds would there be? The airport taxi sped along hedgerows and scattered trees out of which some birds flew. What were they? A closer view revealed them—English sparrows!

In the weeks that followed we explored the New Zealand countryside and found the birds we had been hoping to see. Here, far down the Pacific, not in England, we made our first acquaintance with the skylark, the chaffinch, black-bird and thrush—famed birds of classic British literature. Here, also, we met the native pipit, bell bird, tui and a host of others. In due time we also became acquainted with the “more-pork” as they call a little owl here. Much later, in the south, we could hear the kiwi, but we did not see this nocturnal bird.

As time went on we became conscious of more than birds. The tree ferns and the brilliant red flowers of the pohutukawa, the New Zealand Christmas tree, fascinated us. We found it blooming when we arrived in December. The New Zealand “bush” has an attraction that appeals to any naturalist, and we could understand why we met so many New

Zealanders who have an intimate knowledge of their native plants. The myriad mosses, splendid and varied ferns, numerous epiphytes on large tree limbs, the mysterious vines, demure and simple orchids, and strange trees, all combined to present a forest with a strong exotic appeal to visitors like us. Gradually, through the patient promptings of friends, we became acquainted with the totara, rata, rimu, lancewood, the kauri pine, and many others. We learned to avoid the lawyer vine with its clinging spiny leaves and twigs, and more than once we became entangled in supplejack, a liane.

We learned that New Zealand is now deciding whether or not to preserve, unaltered, one of the last of the remaining groves of native bush that is characterized by the magnificent kauri pines. It recalled our own early struggles to make up our minds about preserving our American coastal redwoods, giant sequoias, sugar pines, Torrey pines, and other living treasures.

We had, of course, understood that New Zealand was a land where introduced exotic species had run riot, where the original environment had been changed adversely, beyond recognition—an object lesson to all the world. The people here admit it freely, and we were happily surprised to find that many present-day New Zealanders have taken stock and are carefully searching for a remedy. More and more these people are

The New Zealand “bush” is a tropical rain forest in a temperate climate, without the oppressive heat of the hot tropics. Tree ferns along the road between Franz Josef and Fox Glaciers. Photograph by Thelma R. Kent. All T.R.K. photographs were loaned to us by Turnbull Library, Wellington.

becoming conscious of soil erosion problems. They are giving serious thought to the experience of other nations, studying their literature and their techniques.

National park policies have not become standardized in this country, but a good number of national parks have been established. When the rare *Nothornis* was rediscovered in November, 1948, the government was prompt in proclaiming a protected zone about this supposedly extinct bird and took certain measures to help it survive. The *Nothornis* had not been seen since 1898, and there are only three specimens of it in museum collections in the world.

There are a number of native bush, scenic reserves, and a number of nature reservations so strictly protected that one may not enter except by special permit. I do not mean that all resources are safe from destruction, but it was indeed heartening to meet so many people who appreciate the beauty of their country and are striving for its preservation.

While at Wellington we learned about Kapiti, an island reserve a short distance off the coast. Through the kindness of certain officials we were permitted two visits there. Years ago, the native vegetation had been destroyed to a great extent. The island is now protected to help the recovery of the original forest growth and to encourage the return of native birdlife. The island also has historic significance. Mr. Heron from the Turnbull Library at Wellington, who came with us on one of these trips, gave us lively incidents from the history of Maori and whaling activities there. We visited a cave which figured in early Maori life, and we saw the try pots once used by the whalers. Kapiti would probably correspond to a national monument in our country.

Mr. Lindsay, the genial caretaker, had come to meet us at the mainland and took us across in his motorboat. As we stepped ashore we were conscious of the singing and feeding of the tuis, or

"parson birds," which were very busy about the nectar in the tubular blooms of the so-called native "flax." There, also, we met Mrs. Lindsay, who has become intimate with the birds about headquarters. She escorted me up the trail through overhanging bushes and trees to the caretaker's house well back from the beach. She pointed out a parakeet, its green blending with the green of the foliage, and we had glimpses of other small birds.

At the house Mrs. Lindsay brought out some dates. We had seen two green parrots in the trees nearby. One of these canny birds came up from limb to limb, apparently well acquainted with the lady who now approached with the tidbits.

"Sing!" Mrs. Lindsay commanded.

The bird obediently uttered the most musical series of whistling notes—something which I would not have associated with a parrot. Mrs. Lindsay gave the bird a date, which it evidently relished. These two parrots, or Kakas, are perfectly free and wild, but have become very companionable through association with the friendly Lindsay family.

A gray duck with its brood of young puttered about the doorstep. A weka came up to investigate. The weka, a henlike, flightless bird allied to the rails, will enter your tent, carry off your tooth brush, eat your soup, sample anything it can get its beak into and likewise make itself one of the family!

I watched a native pigeon at close range, where the iridescence of green and bronze was resplendent in the sun. But aside from its color this pigeon has another appeal as you see it in the distance in flight against the background of a green hillside. People here speak with appreciative enthusiasm of the "swallow dive" of the pigeon. It has a deliberate upsweep in its flight, then a sharp dip on set wings with a soaring glide, graceful and charming as a movement in an old-fashioned waltz. It is obviously a form of aerial playfulness which in a way reminded us of the play-



Many New Zealanders love the kea, a native parrot of the high mountains (photographed here by Thelma R. Kent), which is not as generally destructive to sheep as supposed.



The green New Zealand parrot, or kaka (photographed by Donald Murie), may become so friendly as to eat out of one's hand.

The trim little red-billed gulls are neat, light on the wing, and striking to the eye, their red feet and beaks contrasting with their white plumage. Photograph by Donald Murie.





ful flip-flop of our American raven in flight.

While at Kapiti we had another thrill. We had read about the numerous species of penguins of New Zealand. Kapiti is not a penguin rookery, but a young lady at the caretaker's household knew where there was at least one penguin and she led us to a bit of rocky shore. There in a stony crevice we found the bird and pulled out a vigorously protesting blue penguin. We photographed it in our hands, examined it minutely, and returned it to its solitary retreat in the rocks. This was not like walking about among the dense colonies in the Antarctic, or the large penguin colonies of New Zealand. Nevertheless, here was one penguin, the first wild one in our experience. And it *was wild*! A cut on my hand and another nip on my face testified to that.

We went on to a nesting colony of red-billed gulls on the beach. The closer we approached the greater grew the din as the rising birds arose and screamed at the intruders. Some of them continued to brood their eggs within a few feet of us. Others hovered solicitously over their downy young. Still others were full-grown young in their first full plumage. They are neat, these little gulls,

light on the wing, and striking with their red feet and beaks contrasting with the white plumage. Two or three of the large black-backed gulls nested nearby; they seemed clumsy, almost ungainly, in such close proximity to the trim little red-bills.

I shall not attempt to list the birds of Kapiti. The New Zealand robin (not at all like ours) deserves a chapter to itself. We saw other "bush birds," and along the coast, terns and shearwaters. I only wish I were competent to do justice to the botany of the island.

I cite this experience as pointing to what New Zealand is developing in the way of nature preserves and national parks. These few notes are scribbled in our tent in the rain forest of Fiordlands National Park, in the south end of South Island, a rugged country if ever I saw one. We have been deluged by rain. Our camps have been flooded by overflowing rivers. The few trails are rough, steep and soggy—a difficult wilderness to travel.

But I recall a particular sunny day on the snow grass tops, with a band of saucy keas, a parrot that has chosen to live above timberline. The friendly little fantails flutter about you, alighting on your arm, fluttering before your face,

OPPOSITE PAGE

The author inspects a crested penguin at head of Caswell Sound in the remote Fiordland of New Zealand. Photograph by R. C. Murphy.

Wekas or woodhens are flightless rails peculiar to New Zealand. These birds were constant camp-mates of the author in the "bush" along the Stillwater River. Photograph by R. C. Murphy.

New Zealanders call this little owl the "more pork." Photograph by Thelma R. Kent.

Red-fronted parakeets frequent the greenery of a tree-sheltered path on Kapiti Island. Photograph by Thelma R. Kent.

intent on the sand flies that suck your blood. The handsome tomtits quietly flit about your camp. And on the Stillwater River we had a musical group of bell birds to hearten us with their bright jubilee. This area, rugged and rainy, has been made the Fiordlands National Park. Will it some day challenge the adventurous youth of New Zealand to brave its inconveniences and perhaps to understand and appreciate what it has to offer—from the fiords of its coastline, up through the dense beech forest, to the open snow country of the tops? I believe so, and I believe New Zealand's government was wise in making this area a national park.

New Zealand played host to the Seventh Pacific Science Congress this year. Our section of the Congress was concerned with international cooperation in the preservation of nature. Attending some of these conferences, I was impressed by the universal awareness of this need. It seems significant to me that, in these deliberations, New Zealanders themselves showed great interest. We may find that the country we have so often cited as a horrible example of tampering with nature may come to the front with equally striking efforts toward recovery.



THE PRESIDENT

Reports TO YOU

HERE'S drama for you, fully equipped with tragic ending. Our hopes ran high; the climax was the more poignant. They said there was one chance in a million that the pair of captive whooping cranes, transported nearly a year ago into an open-topped, 150-acre enclosure on the Aransas National Wildlife Refuge in Texas, would build a nest and lay eggs; in view of their having been, for 13 and 8 years respectively, in captivity, each alone! The Rod and Gun Club of Gothenburg, Nebraska, presented one to the Society which was brought to the St. Louis Zoo and picked up by George Douglass, Superintendent and Secretary of the Audubon Park Commission in New Orleans. The New Orleans Zoo had a whooping crane which had been there since 1941. Through the generosity of the Audubon Park Commission, this bird (the only live whooping crane in any zoo in the world) was loaned to the Society in order that a breeding experiment might be made in bringing the two captives together in natural whooping crane habitat at the Aransas Wildlife Refuge.

Since December they had been dancing and in March and early April these displays became more frequent. Each day during this period, both cranes came to the fence when called and took the small amounts of bread and corn (the bread smeared or soaked with wheat germ oil). They seemed to enjoy this in addition to their normal consumption of blue crabs, shrimp and smaller crustaceans, fish, marine worms, frogs, snakes and fresh water crayfish, all of which are plentiful in the fresh and brackish water habitats within the enclosure.

The first change in their general behavior was noted on April 27 by Refuge Manager Charles A. Keefer, when the male bird came to the fence alone. The female was working away at something in the nearby cattails. On April 29 the female was sitting down amid the thick growth of cattails and Joe, as the male is called, came to the fence as usual. On April 30 Mr. Keefer approached the nest closely enough to see that it contained a single egg. Apparently the second egg was laid on May 1. The in-



Left: In the New Orleans Zoo for eight years this whooping crane was photographed at Audubon Park by O. S. Pettingill, Jr.

A Nebraska whooping crane which was a captive for 13 years before it was brought to Aransas Refuge in Texas. Photograph by John Gerard.



incubation period, which is not definitely known, had been calculated at $34\frac{1}{2}$ days on the basis of a mathematical formula of egg volumes.

Within 24 hours of learning of the egg-laying, Bob Allen of our staff sped to Arkansas from south Florida. He spent all daylight hours, from 5 a.m. to 7:30 p.m. on the observation tower, anxiously awaiting the arrival of H-Day (H for Hatching).

After years of captivity, these cranes were used to crowds of staring people and had lost almost all fear of man, but they had not lost their mistrust of him. No one could enter the enclosure without arousing from them a loud chorus of protesting whoops, whether after dark or during the daytime. Anyone daring to enter the enclosure would not only be unnerved by this "burglar alarm," but would have had at least two of the Refuge staff pouncing on him before he could escape. Two men slept nearby.

Plans were made to shut out all visitors prior to the probable date of hatching of the young. Of course, it remained to be seen whether or not the eggs were fertile, and if they hatched, whether the young could survive the conditions that prevail in the summertime on Texas coastal marshes. There were grounds for optimism, because whooping cranes had nested successfully on the Louisiana marshes. Had this experiment resulted in the successful raising of young whooping cranes, the chances of perpetuation of this magnificent species, now reduced to 33 birds, would have been greatly enhanced.

On the morning of the estimated 24th day of incubation for the first egg, the cranes broke up the eggs themselves and deserted the nest. In Bob Allen's own words:

"I reached the tower at 5:25 a.m. Within two minutes I observed that the behavior of the two birds was strange. They appeared to be pecking at something in the nest. First I thought the original estimate might be wrong, and perhaps the first egg had hatched. A little after six o'clock it was apparent that this was not the case. The two birds joined each other back of

the nest and danced. The male let out a brief whoop and the pair walked together out of the cattails into the open meadow and on toward the brackish marsh. I then went for Refuge Manager Keefer and Guy Colbath, an expert tracker. Dr. L. H. Walkinshaw, who has had wide and varied experience with both wild and captive cranes of several species was with me.

"The four of us walked to the nest at 6:30 a.m. We found the eggs almost completely smashed and lying on the nest platform and along the rim. Both had been infertile, there being no sign of blood or embryos. The holes in the eggs seemed to have been made by the birds themselves and the four of us agree that the eggs had been destroyed by the cranes—probably at dawn that morning, when we saw them pecking at an object in the nest. It should be emphasized that there was no evidence that the eggs had been destroyed by anything but the cranes themselves. There were no tracks in the grass or mud and no sign of struggle or fight. Dr. Walkinshaw tells me that there are many examples of infertile eggs among wild birds, the average among sandhill cranes observed by him running as high as 30 per cent. While our disappointment is intense, we strongly urge that the two cranes be allowed to remain in the present enclosure and given another opportunity. By all means, let us stick with them through another spring."

The U. S. Fish and Wildlife Service played an important part in this experiment, not only through provision of the enclosure, but through the devoted attention to the welfare of the cranes on the part of the Refuge Manager and his staff.

In the meantime, we hope that the wild remnant of this species, which has migrated northward to unknown nesting grounds, will have better success in raising its young in 1949. Bob Smith of the U. S. Fish and Wildlife Service will again search for nesting whooping cranes while surveying breeding waterfowl conditions in the Canadian northwest. He will pay close attention to the one relatively small area of apparently suitable nesting territory which was not

checked last summer during the extensive flights in which Bob Allen participated.

NEW AIR PATROL FOR TEXAS SANCTUARIES

The Texas coast line extends some 360 miles from Louisiana to Mexico. The surf thunders on the beaches of the barrier islands. In the extensive lagoons between these islands and the mainland there are many small islands, or chains of islands, on which large numbers of water birds nest each year. It is the responsibility of your Society to guard the nesting birds on 19 of these islands and chains.

This year, for the first time, owing to the generosity of those who have contributed to the Sanctuary Fund, it has been possible to arrange for a part-time flying patrol over a considerable section of this coast. The plane has pontoons, such that our pilot may land on the water and taxi close to islands in shallows that a boat could not cross. Bob Tanner of Port Lavaca has, for years, been flying this coast as a representative of the Texas Fish, Game and Oyster Commission. He is an experienced pilot and a man of high character, devoted to the preservation of wildlife, the furtherance of conservation and, in particular, the protection of these coastal bird-nesting colonies.

Tanner's assignment includes the Second-Chain-of-Islands, where he guards one of the most spectacular congregations of nesting water birds on the entire gulf coast—roseate spoonbills, white ibises, brown pelicans, skimmers, terns, American, snowy and reddish egrets and various herons. This is in the same area frequented by the wintering whooping cranes which it will be his obligation to help protect. In so doing, he will supplement the efforts of the personnel of the Aransas Wildlife Refuge of the federal government.

Up in Galveston Bay, Bill Rheney, Audubon Wildlife Tour leader in southern Florida the past winter, is living on one of the Society's boats, protecting the fine nesting colony at the Vingt'un Islands—roseate spoonbills, white-faced glossy and white ibises, American and snowy egrets, Louisiana and Ward's herons. This is a state sanctuary, guarded by the Society through an understanding with the Texas Fish, Game and Oyster Commission. The members of our affiliated group, the Houston Outdoor Nature Club, have devotedly contributed time and funds to vegetative plantings on these islands to control erosion. The bulk of the roseate spoonbills raised each year on the Texas coast come from nests at the Vingt'un Islands and the Second-Chain.

Photograph of reddish egret by Allan D. Cruickshank.



Far to the southward, on Green Island, not far from the Mexican line, John Larsson, veteran of 21 years in the Society's employ, faithfully guards the principal colony of reddish egrets in the United States. Besides these, there are American and snowy egrets, Louisiana, Ward's and night herons, white ibises and least terns; also numerous non-breeding roseate spoonbills and white pelicans.

The two other big-production rookery islands on the Texas coast—Lydia Ann and South Bird—are posted with the Society's signs and are patrolled by plane. On many mud lumps and reefs all along the Texas coast there are fine colonies of terns, gulls and skimmers, sometimes with numerous herons, egrets and small numbers of roseate spoonbills. Your Society is now following the only really effective method of guarding these isolated lumps and reefs—by pontoon-equipped plane.

CALIFORNIA CONVENTION

In California, in early April, your Society staged an all-California Audubon Convention at Pacific Grove, on the Monterey Peninsula. This was a get-acquainted occasion at which representatives of some 20 other organizations, interested in nature and conservation, spoke to us about their programs and heard about ours. They participated with us in field trips and good times together. The presidents, or other representatives, of our ten branches and affiliates in the state, made an impressive presentation of the programs and activities of those groups. The entire staff of the Audubon Nature Camp of California was present and led groups on scheduled field trips. The Monterey Peninsula Audubon Society acted as host, and its members were unsparing in their efforts to see that all those in attendance thoroughly enjoyed themselves. Our eminent guest speaker at the banquet, the Honorable T. M. Erwin, Chairman of the California State Assembly's Committee on Fish and Game, spoke on "California's Progress in the Conservation of Natural Resources." Feeling seemed

to be unanimous that another meeting should be held at Pacific Grove in 1950.

BIRD PLUMAGE BILL AMENDED

As reported in the last issue of *Audubon Magazine*, the conservation committees of the New York State Assembly and Senate altered the wild bird plumage bill amendment so that the extension of time granted feather dealers to liquidate still unsold inventories (that had been listed with the State Conservation Department as on hand for sale April 15, 1941) was cut to one, instead of three years. The legislature passed the bill in this form and the Governor signed it. The feather trade will have until April 15, 1951 to completely liquidate their feather inventories.

Had it not been for the expression of their views by the members of the Society in New York State to their State Legislators, the reduction in time might not have been effected. It now seems unlikely that any attempt to further extend the time would meet with a sympathetic hearing by the conservation committees of the state legislature.

DUCK STAMP BILL ISSUE

The Duck Stamp Amendment bill, introduced in both houses of Congress, has not, as of this writing, been reported out of committee, but a hearing on H.R. 3711 has been held and by the time you read this column, the chances are that the issue over the content of this bill will have been settled. Many members of the Society have written to their congressmen and to the chairmen of the committees. The issue is over one feature of the bill which would permit the Department of the Interior, at its discretion, to open up to public shooting, in whole or in part, areas hereafter acquired with duck stamp monies. Your Society has taken the position that areas acquired with duck stamp funds should, as heretofore, be maintained as inviolate migratory bird sanctuaries. For a more complete statement of our stand on this issue, see page 183.

INTERSTATE FOREST FIRE PROTECTION

Those of you who live in the Northeast will remember the forest fires that raged two summers ago—especially in Maine. There has now been introduced S.1659 jointly sponsored by senators from the northeastern and nearby states, which would give the consent and approval of Congress to an interstate forest fire protection compact. This is designed to promote effective prevention and control of forest fires in the northern region of the United States, and adjacent regions in Canada, by developing integrated forest fire plans and by maintaining forest fire fighting services by the member states. This seems to be highly desirable legislation.

HOOVER COMMISSION AGAIN

Your attention is invited to an error in this column in the last issue, wherein it was stated that the Hoover Commission on Organization of the Executive Branch of the Government had recommended the creation of a new Department of Natural Resources. The error was due to your President's writing the column while traveling on the Pacific coast, without complete information available. That recommendation was made by the Task Force on Natural Resources, and not by the full Commission. The Commission submitted a divided report, the majority falling for a revamping of the Interior Department and the inclusion therein of sundry public works agencies concerned, for example, with construction of buildings, airports, etc. The full Commission's report is not only studded with dissenting footnotes by the late Mr. Forrestal, but is accompanied by a printed minority report of three members of the Commission, including Vice-chairman Dean Acheson. This minority report fully supports the recommendations of the Task Force on Natural Resources. The failure of the full Commission to support its Task Force in this matter is unfortunate; in fact a probable result, quite contrary to its own expressed preferences, is now apt to be a growing feeling that, in order to get

something effective done to conserve natural resources, it may be necessary to resort to Valley Authority procedure.

Recently various bills have been introduced in Congress that would set up a Columbia Valley Authority. This is an administration project and there is evidence that it will be vigorously promoted. We are not as yet prepared to state whether we feel that this is a fortunate or unfortunate trend. We do know that regardless of different ideologies and political theories, the controlling factor in the long run will be economic; that the basic natural resources will have to be conserved in the public interest. You may wish to obtain copies of these bills (S.1631, S.1645, H.R. 4286, H.R.4287).

ANNUAL CONVENTION TO BE HELD IN DETROIT

The directors have appointed as members of the Nominating Committee for Directors, Mrs. Robert C. Wright of Haverford, Penna., Chairman, Mrs. Francis B. Crowninshield of Montchanin, Delaware and Mr. Gayer G. Dominick of New York City. The Committee's nominations will be published prior to October 18, 1949, the date of the next annual meeting.

The 45th annual convention of your Society will be held in Detroit next October 15-18, with our branch, the Detroit Audubon Society, as host. It is anticipated that there will be an unusually large attendance at this convention—especially from the Mid-west. Put the date on your calendar now and plan to attend. Programs should be in the mail in late September.

An annual dinner will be held in New York City on Tuesday, November 15 as has been the custom for 15 years. Those of you in the northeastern Atlantic and nearby states will want to make note of this now.

If you have an opportunity to participate in one of the 2-week sessions this summer at any one of our four Audubon Nature Camps in Maine, Connecticut, Texas or California, we predict you will have a marvelous time and enjoy the experience.

The Issue over Public Shooting in Federal Waterfowl Refuges

Remarks of John H. Baker, President of the National Audubon Society, at hearing on H.R. 3711, held May 24, 1949 by the subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, at Washington, D.C.

THE National Audubon Society, with nation-wide membership, is devoted to arousing public appreciation of the value and need of conservation of soil, water, plants and wildlife, and of the relation of their intelligent treatment and wise use to human welfare. We are very much concerned with the plight of the continental supply of migratory waterfowl and the urgency of such measures as may best assure the preservation of an adequate breeding stock.

In our opinion, H.R. 3711, now before your Subcommittee for consideration, holds possibilities, if suitably amended, of contributing to this desirable objective.

We favor increasing the price of the duck stamp from \$1 to \$2. This is the first provision of H. R. 3711.

We favor providing a larger share of the proceeds of the sale of the duck stamps for enforcement activities and equipment, at the discretion of the Department of the Interior. This is taken care of by the second feature of H.R. 3711, through the substitution of the figure 75 for the figure 90, as set forth in Section 2.

Apparently there is no controversy about those two provisions and, if the bill were limited to those two provisions, there presumably would have been no occasion for this hearing. The bill would presumably already have been favorably acted upon by your Subcommittee and might even, by now, have been enacted into law.

We are strongly opposed to the third feature of H.R. 3711, as it would grant discretion to the Department of the Interior to open to public hunting, in part or in whole, all of the areas acquired after enactment of the amendment. This provision has brought out honest differences of opinion. Personal feelings should not, it seems to me, enter into the debate on the merits of the case. We advised Mr. Day, Director of the Fish and Wildlife Service, long before either H.R. 3711 or its companion bill was introduced, that if the bills were to contain

provision authorizing opening to hunting of existing or to-be-acquired refuges, in whole or in part, our Society would feel constrained to register its opposition to such features with the committees and members of congress.

May I invite your attention to the record of recent years? H. R. 3460 was introduced in June, 1945 by Mr. Robertson. H. R. 5021 was introduced in December, 1945 by Mr. Biemiller. H. R. 2617 was introduced in March, 1947 by Mr. Kersten. H.R. 3802 was introduced in June, 1947 by Mr. Kersten. S. 2482 was introduced in April, 1948 by Senator Robertson. All of these bills contained provision for public shooting in federal refuges. They all failed to get out of committee, except S. 2482, which was reported out in an amended form, providing only for increase in the price of the stamp; it died in the House. In spite of that record, and the fact that there is no appreciable controversy over two of the three features H. R. 3711 and S. 1076, companion bills, with provision for public shooting grounds, were introduced at this session of the congress.

The Population Problem

Fundamentally, the problem with which we are dealing is forced on us by the pressure of increasing human population and by the encroachment of civilization on nesting, resting and feeding areas used by our waterfowl. From the most recent peak of continental waterfowl population in 1944, there was a drastic decline, and restrictions on take were tardily put into effect. With roughly five times as many licensed waterfowl hunters as 15 years ago, the official figures of kill and cripples in the past three hunting seasons—not including violational kill and cripple figures, which must be large—are 24,000,000, 15,000,000 and 20,000,000 respectively; this as compared with an official estimate of 54,00,000 total continental waterfowl sup-

ply two years ago. The rise in kill, aside from crippling, in 1948 has been officially stated as 48 per cent greater than in 1947 and the number of hunters as increasing 27 per cent. Under such circumstances, do you think that the opening up to exploitation of our "reservoirs of supply," namely federal refuges, would seem advisable? Would it not rather be the first step toward a situation in which the same character of hunting pressure would still exist, but no reservoirs of supply worthy of the name would remain?

Waterfowl Part of Nature's Economy

In its bulletin of May 7, 1948, the Wildlife Management Institute, which has been inclined, we believe, to differ with us, stated in part: "Legislation reducing the number of refuges could signal the beginning of the end of duck hunting in this country. America's waterfowl need these refuges. Hunting pressure is higher than ever before in history. Resting and feeding places on migration routes and wintering and breeding grounds should be doubled rather than decreased. . . . Public shooting grounds are needed badly in some localities; however, at present, refuges are needed much more urgently. Turning vital refuges into public hunting grounds might benefit local hunters for a few seasons, but, until the continental waterfowl picture improves, first consideration must be given to the ducks."

In its bulletin of March 25, 1949, the Wildlife Management Institute states, in part: "The refuge system . . . is more seriously needed today than at any time in our history and the value of the refuges will grow as time passes. As human population increases, more and more land that served as breeding, resting and wintering grounds for waterfowl will be put to industrial and agricultural use. An expansion of the refuge system and its protection will become increasingly

essential as the years pass."

We suspect that some of those who are inclined to oppose our views in this matter look upon our waterfowl merely as a crop that must be harvested each year. But there is a broader view: we have long since, for example, passed the stage when our people looked on, let us say, our songbirds as a crop that must be harvested each year.

Fairfield Osborn, President of the Conservation Foundation, wisely stated the other day, in referring to wildlife: "We still think of it as game animals, waterfowl and fishes at the far end of a rifle, a shotgun or a fishing line. We are apt to forget that animal life, from protozoa to mammals, is an integral element in the entire economy of nature." No truer words were ever spoken. The waterfowl have their role to play. The National Audubon Society represents the viewpoint of many sportsmen, but also of an increasing throng of citizens who enjoy observation, photography and other non-killing uses, and are aware of the contribution that our waterfowl make to the maintenance of favorable natural conditions and thus to human economy.

Gentlemen, this old world was set up, presumably by God, to function in a certain way, yet man, from the time of Adam and Eve, has, in his conceit and ignorance, attempted, without success, to improve on that way. When I think of the phrase "wildlife management" I tend to smile, because it seems to me that the fundamental problem with which we here have to deal is not so much wildlife management as human management.

Refuges Should Remain Refuges

Now the purpose of insertion of the words "wildlife management and" before the words "inviolate migratory bird sanctuaries," as is provided by the third feature of H.R. 3711 is, in plain English,

to grant the Department of Interior discretion to open to-be-acquired areas to public shooting, in whole or in part. Originally, the idea of the sponsors of this provision was to have it apply also to the existing inviolate sanctuaries. Abandonment of provision that it so apply represented the offering of a concession in an effort to gain the support of those who, like the National Audubon Society, believe that refuges should remain refuges and that they cease to be such when they are opened, in part or in whole, to shooting.

Funds for Public Shooting Grounds

We wish to here repeat and strongly emphasize that the National Audubon Society is not now, and never has been, opposed to hunting; that it recognizes the recreational value of field sports legally pursued; that it also recognizes the validity of the law of supply and demand, and the consequent need of regulation of deliberate take, so that there may be maintained an adequate breeding stock.

We believe that it should be the function of the federal government to protect and to restore, but not to go into the shooting business. If it did, it would be regulating its own business, which is bad administration.

If the federal government were to go into the shooting business, the pressures with which it would have to contend in order to avoid opening up far too much of the refuges to hunting would be tremendous. Mr. Albert M. Day, Director of the Fish and Wildlife Service, at a hearing Feb. 9, 1949 before the Subcommittee to Investigate Wildlife Conservation of the Committee on Expenditures in the Executive Departments, said: "We are going into this attitude with a full realization that it would mean a lot more pressure on the Service. We know that if this provision were put in, we would have lots of battles to fight lo-

cally to keep people away." Mr. I. T. Bode, Director of the Missouri Conservation Commission, in recording his willingness to grant discretion to the Fish and Wildlife Service, said: "It will take courage, of course, because the demand will be for every area to be open all the time."

It is our view that the provision and management of public shooting grounds should be handled by the states; not by the federal government. Naturally the tendency of most state fish and game or conservation department administrations is to favor a set-up whereby the federal government would pay for the acquisition and maintenance and absorb all the pressures and other grief. Yet we notice, in reviewing the 37 letters that Senator Robertson put on record in the hearing of the aforesaid Subcommittee, that opposition to the public shooting grounds feature of H.R. 3711 was registered by the states of Iowa, Mississippi, West Virginia and Florida.

States Can Do the Job

We believe that the states might well finance public shooting grounds programs with the aid of Pittman-Robertson funds. Each year now the taxes collected by the federal government on sales of sporting arms and ammunition total about \$12,000,000. In addition, there are \$13,500,000 in the Treasury, unappropriated. Any state submitting a project for the use of Pittman-Robertson funds, and obtaining the approval thereof by the Fish and Wildlife Service, need only finance 25 per cent of the total cost. This seems to us the way in which the matter should be handled. Should the federal government be authorized to go into the shooting business on waterfowl refuges, the states would inevitably lose interest in providing public waterfowl hunting opportunities. It would tend to kill all state incentive. We would invite attention to the current program of the

State of California, which has recently allocated \$2,380,000 for four waterfowl projects in which there will be public hunting. As yet, California has not, apparently, asked for the aid of Pittman-Robertson funds in this connection, but perhaps is intending to do so with regard to maintenance, as distinct from acquisition costs. We offer this illustration because it is proof that at least some of the states can take care of this matter themselves if they want to. There would seem to be no need of Uncle Sam's acting as Santa Claus.

Should We Compromise?

Now, it might be said by some of those who oppose us in viewpoint that we should be willing to compromise this issue. In principle, we are not opposed to compromise, but much depends with relation to what. For example, one may well compromise on the allowed number of shooting days, or shooting hours, or on the price of the stamp, or the percentage of avails that may be used for enforcement, but when we come to the question of whether or not federal waterfowl refuges—even with the limitation that it affects only those to be hereafter acquired—be opened to public shooting, we feel that we are dealing with a fundamental principle that cannot be compromised in practice, without undermining and, in effect, torpedoing the primary purpose of the federal waterfowl refuge system.

Therefore, we urgently recommend that your committee favorably consider striking from H.R. 3711 the words in the last four lines, "and (2) by inserting the words 'wildlife management and' immediately before the words, 'inviolable migratory-bird sanctuaries' as they appear therein." Thus the bill would terminate with the figure "75" in the third line of Section 2. In the event of such action by your committee, our Society would warmly support the bill.

Audubon Guide To Bird Attracting

A department in which our readers can share with each other what they have learned about how to attract birds.

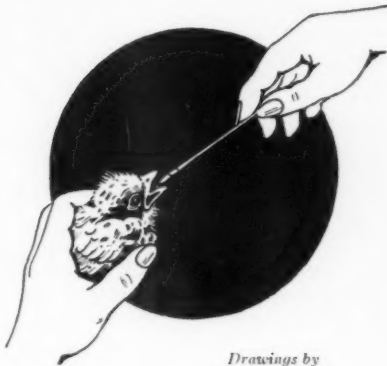
EVERY year, birds' nests are blown out of trees by violent storms and newly-hatched, or half-grown young birds, scattered on the ground. If the nest and fledglings can be replaced in the tree or bush, it is far better to do so and let the bird-parents go on with an exacting job for which they alone are best suited. But if you enjoy being a foster parent, the experience of establishing a nursery for young birds can be rewarding. When the nest has been destroyed, and the youngsters seem doomed to perish without your care, take them in if you are prepared to devote yourself to the task of feeding them at 15-minute intervals for at least 12 hours during the day. Here's how one of our correspondents, an expert at caring for baby wild birds, does it.

If the nest has been destroyed, she puts the helpless young birds in a box in a substitute nest, perhaps of grass, lined with soft cloth or cotton so that the birds' feet have something pliable to push against. She keeps them warm by covering them

Jerry, a hand-raised brown thrasher that learned to mimic human conversation. Photograph by Marie V. Beals.

Care and feeding of wild birds

Rules for becoming a successful foster-parent



Drawings by Sally Tate

When holding the bird in one hand, be sure to enclose its wings gently, but firmly, and allow its feet to grasp your little finger as a perch.

with a cloth and protecting them from drafts. If the fledglings are old enough to perch, she puts them in a large cage, or better, gives them the freedom of a room in which they can learn to fly.

Young birds should be handled as little as possible and not fed too much at a time. Feed them only during daylight hours, but feedings should be frequent, at least every 15 minutes or, at most, half an hour apart. Young birds are like our own children; they demand all the attention they can get, but regularity of feeding gives the best results.

FOODS AND FEEDING

Feeding is common sense, with a dash of ingenuity. Many people try to feed foundling wild birds simply on bread, even offering it to owls and grebes.

Our correspondent's basic food for very young songbird nestlings, other than hummingbirds, is equal parts of finely-mashed yolk of hard-boiled eggs and finely-sifted bread crumbs, *slightly* moistened with milk or cod-liver oil. This mixture will

agree with starlings, blue jays, cardinals, towhees, robins, catbirds, orioles, sparrows and other small birds. Good supplementary foods are canned dog-food, bits of grapes, cherries, bananas, or soft apple pulp, pieces of earthworms that have been "squeezed out," and bits of scraped or finely chopped meat. One woman with an orphaned yellow-billed cuckoo got a supply of insects for it each night by attracting insects to a light in her window.

At first, older fledglings may not eat. To force-feed them, hold the bird by enclosing its body and closed wings in your left hand, and with your forefinger and thumb, gently pry open the bill at its base. In your right hand hold a medicine dropper, or an improvised narrow wooden spoon, or better, a small paint brush to pick up food on the tips of its bristles. Poke the food down the bird's throat, but not too much at once or it will choke. In a short time the youngsters will learn to open their bills for food. Continue the feeding until the bird's crop is full, and it should be especially full at nightfall, just before the bird goes to sleep.

To supplement her basic diet, our correspondent includes chopped nasturtium and watercress, rich in calcium and vitamins, and cottage cheese for added protein.

Most seed-eaters—cardinals, grosbeaks, and finches—also need fine gravel and charcoal, crushed seeds, chopped greens, fruits, mealworms and insects.

Young woodpeckers eat a mixture of dog-food and the basic finely-mashed egg yolks.

For baby hummingbirds supply a syrup in equal parts of sugar and water fed with a medicine dropper. After about 10 days, our correspondent feeds the hummers their first protein—dried dog-food very finely sifted and thoroughly mixed with the syrup.

Young hawks and owls require meat, preferably meat with the fur or feathers on it which aids the digestion of raptorial birds. Feed them on freshly-caught rats and mice, or poultry and raw beef sprinkled with cod-liver oil, with which chicken feathers may be mixed.

WATER AND SUNSHINE

Small birds are quickly killed by forcibly giving them water. Before they learn to drink, they receive sufficient water for their needs from their food. When they are old enough to sit on a perch, water may be offered in a shallow dish. You may also dip their bills into a water-cup until they learn to drink by themselves. Young birds must have some sunshine too, but they should be shaded from the heat of the mid-day sun. Birds, like humans, welcome a cool retreat in hot weather.

WHEN THE BIRD GROWS UP

No matter how attached we may become to the birds we have raised, we must remember that we have been their protectors, not their captors; that

Young birds should be handled as little as possible and should not be fed too much at any one time. Young chipping sparrow photographed by H. D. Wheeler (left) and young tufted titmice photographed by John H. Gerard (right).



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When the youngsters are old enough to sit on a perch, water may be offered them in a shallow dish. These young veeries, photographed by Hugh M. Halliday, are shown on our cover.

wild birds belong to the State. As soon as a bird is strong enough, it should be allowed to forage for itself and should be turned loose as soon as it is able to fly. If the foundlings are not encouraged to return to a wild, free life, they will learn to depend upon human assistance which may bring them disaster when they are suddenly thrown upon their own.

REFERENCES FROM AUDUBON MAGAZINE

- "Tribulations of a Sparrow Rancher" by George M Sutton, Sept.-Oct. 1948, pp. 286-295.
"Homer the 6th Grade Grackle" by Elizabeth B. Clarkson, Sept.-Oct. 1948, pp. 284-285.
"Baby Sitter for Chimney Swifts" by Margaret Whittemore, May-June 1948, pp. 181-183.
"The Owl Who Went to College" by Virginia Orr, Sept.-Oct. 1947, pp. 280-282.
"Food! Food! Food!" by Josephine V. Willis, Jan.-Feb. 1947, pp. 18-22.
"An Owl Friend of Mine" by James B. Young, Sept.-Oct., 1945, pp. 306-308.
"Personalities in Feathers" by Gertrude V. Grover, Jan.-Feb. 1945, pp. 23-29.
"Experience With Fledglings" by Sara Menaboni, May-June 1944, pp. 140-146.
"A Thrasher Talks His Way to Fame" by Marie V Beals, Sept.-Oct. 1942, pp. 281-285.

FOR NEXT MONTH

"What kind of a bird bath shall I put in my backyard?" and "What do you feed the birds in summer?" are questions we get at Audubon House at this time of the year. Please send us your experiences, with sketches or pictures which we might include in this column.

ADAPTABILITY OF BIRDS



Some birds, like other wild creatures, are quick to adjust themselves to changes in their environment, even to using man-made nesting materials. This robin has availed herself of paper excelsior which she has woven into her nest to supplement grasses, leaves, rootlets and other natural supplies. Photograph by Lynwood M. Chace.



Ordinarily building its nest of leaves, mosses, strips of bark and feathers, the tufted titmouse may use hair which it sometimes boldly plucks from the backs of living woodchucks or from the heads of human beings. Photograph by Samuel A. Grimes.

NESTING MATERIAL FOR BIRDS

Ordinarily, birds find enough materials with which to build their nests, but in some well-pruned and carefully-raked yards, nesting materials may be scarce. Birds are strikingly adaptive creatures and often will weave into their nests manufactured goods resembling grasses, rootlets; spider webs, animal hairs, and other ordinarily available natural supplies.

Orioles will use yarns, strings, and floss; goldfinches will use cotton; cardinals will use colored threads. Stringlike material should be cut into 8- or 10-inch lengths, for if the strings are too long, the birds may get entangled in them disastrously. White, or dull-colored strings or yarn are safest to offer birds because bright-colored material, woven in the nest, may attract attention to nests that should remain concealed.

One manufacturer makes a nesting material "supply-house" of four compartments which may be nailed to a tree, post, or other convenient place in the yard. Each apartment contains hemp, wool, horsehair, or sphagnum moss, and birds may come here to choose what suits them best, and help themselves. Later, this supply-house may be used as a suet-holder when the nest-building season is over.



Be sure to drape the nesting material over fair-sized tree limbs or other objects and be certain that the strips of thread or yarn are short enough that they will not entangle the bird.

FROM Minnesota to Cape Breton Island, the northern parula warbler weaves the gray-green threads of the tree-inhabiting *Usnea*, Old Man's Beard, into handsome pendulous nests. Farther south, in parts of Maryland, West Virginia and other states where this lichen may not be available, the adaptable little parula uses fine rootlets and even an old piece of burlap as substitute nesting material. Photograph at left by Allan D. Cruickshank; right, by Ralph E. Lawrence.



Resourceful Birds

Book Notes

By John K. Terres

CREAM HILL: DISCOVERIES OF A WEEKEND COUNTRYMAN

By Lewis Gannett, *The Viking Press, New York, 1949. 5¾ x 8½ in., 191 pp. Illus. with lithographs. \$3.50.*

Lewis Gannett, on the editorial staff of the *New York Herald Tribune* since 1928, and editor of the daily book review column, has written a wise and entertaining account of 25 years of country living on a Connecticut hilltop. About Cream Hill, once the abode of his great-great-grandfather, he relates the history of that country, how the woods were first cut off, the sizes and ages of the oldest trees, how the woods came back, the plant succession that slowly molded pastures into woodlands, and of birds, mammals and wildflowers which were replaced during the environmental changes. Some chapters tell such diverse things as how to grow a fern and wildflower garden, and how to get work done by neighbors. All through the book there are shrewd observations on life, nature and people. The fine lithographs by Ruth Gannett beautifully illustrate a book which reminds one of Louis Bromfield's savory adventures in country living, recounted in "Pleasant Valley" and "Malabar Farm."

THE TWELVE SEASONS: A PERPETUAL CALENDAR FOR THE COUNTRY

By Joseph Wood Krutch, *William Sloane Associates, New York, 1949. 5¾ x 8½ in., 187 pp. Illus. by Armin Landeck. \$3.00.*

A series of delightful nature essays by a well-known critic and biographer. In 12 chapters, each of which is devoted to a month of the year, the author speaks with wit and good sense of spring peepers, fox sparrows, beetles, squirrels and birds; of spring rain and winter snow storms, all interspersed with humor and philosophic comparisons between country and city ways of life. There is a great variety here, from the microbe to the moon, from the raindrop to the oak. A rediscovery of the natural world.

HIGH JUNGLE

By William Beebe, *Sloan and Pearce, New York, 1949. 6 x 8½ in., 379 pp. Illus. with photographs. Indexed. \$4.50.*

Another typical nature travelogue, written in the fashion of Dr. Beebe's earlier "Jungle Peace" and "On the Edge of the Jungle." The book is filled with eloquent observations on tropical birds, insects, snakes, lizards and other creatures near

Rancho Grande, a scientific laboratory high in the great cloud jungle of Venezuela. There are stories of the living zones of the minor Andes and their animal life, from the abyssal depths of the ocean to the desert, grassy savannas, and rain forest. Each life zone has its dramatic story—some are of army ants, the silent terrible warfare of the plant world, of butterflies and katydids, toucanets and vultures, ocelots, sloths and mouse-opossums. The author includes the story of his work and that of his assistants in the laboratory. One of the most fascinating chapters of all tells of the lives of a nesting pair of bat falcons and how they raised their young ones. Appendices have common and scientific names of all creatures mentioned in the text and a list of published scientific papers resulting from the Venezuelan expeditions. Illustrated with superb photographs, a book for everyone who has enjoyed Dr. Beebe's other volumes, and a fine introduction for new readers to the writings of one of our greatest living naturalists.

ICELAND: NEW WORLD OUTPOST

By Agnes Rothery, *The Viking Press, New York, 1948. 5¾ x 8½ in., 214 pp. Illus. with photographs. Indexed. \$3.75.*

In this companion volume to the author's previous travel books on the Scandinavian countries we learn that Iceland, a country so warmed by the Gulf Stream that its harbors never freeze, is one of the most literate countries in the world, filled with beauty and scenic magnificence. Miss Rothery describes the people, their customs and language, as well as volcanoes, hot springs, geysers, waterfalls and other natural phenomena. In a chapter, "Of Trees, Flowers and the Ladies," she includes an interesting narrative of Icelandic birds.

CRISIS SPOTS IN CONSERVATION

Isaak Walton League of America, Inc., 31 North State Street, Chicago 2, Ill., 1949. 8½ x 11 in., 25 pp. Looseleaf, mimeographed, paper-covered booklet. Free.

A guide and ready reference to present critical conservation problems involving national forests, national parks and monuments, the livestock-p public lands issue in the West, damming of rivers, drainage, flooding of the Missouri River Basin, the proposed Glacier View Dam, and many other issues which threaten, by commercialization, or proposed changes in use, to destroy or alter wildlife and wilderness areas. The historical background of each problem area, nature of the threat to it, its present status, and a constructive approach to it, are presented in sequence. A supplement to the splendid reporting service of several national conservation organizations, this guide should be in all public and private libraries and available to teachers, students and everyone interested in preserving the natural resources of our country.

BIRDS

HOW TO KNOW THE BIRDS

By Roger Tory Peterson, Houghton Mifflin Company, Boston, Mass., 1949. 4¾ x 7½ in., 144 pp. Illus. with color plates, line drawings and silhouettes. Indexed. \$2.00.

A simplified approach to learning the birds, illustrated in the fashion of Peterson's well-known Field Guides. This pocket-size book is mostly for those who have never owned a bird guide, but it will also serve as a refresher course for those who are skilled in bird study. By applying its principles one may gain within a year a knowledge of birds that it took the old-timers several years to acquire. The book is divided into sections: Introducing the Birds; What to Look For; Families of Birds; Habitats; and Silhouettes of Common Birds. An ideal gift for either child or grown-up, this handy volume is an admirable introduction to the author's more advanced books.

A 35-cent paper-covered edition, published by the New American Library, will be useful for those who like to preserve their books from the wear of carrying them afield.

BIRDS IN BRITAIN

By Frances Pitt, Macmillan, London. Distributed by The Macmillan Company, New York, 1948. 6¼ x 9¼ in., 576 pp. Illus. with photographs, sketches and color plates. Indexed. \$7.25.

Another volume in a series including "Flowers of Britain," "Trees in Britain," and others. This handsome book treats the birds in a lucid, interesting style. Early chapters discuss the bird's place in nature, bird structure, migration, distribution, and bird behavior. The main text, Part II, discusses the families of birds, their nesting, food habits, and specific behaviorisms, with many appropriate literary quotations scattered throughout the book. Most of the photographs are excellent. A desirable volume for anyone interested in British birds.

PENNSYLVANIA BIRDS OF PREY

By Robert D. McDowell and Leo A. Luttringer, The Pennsylvania Game Commission, Harrisburg, Pa., 1948. 6 x 9 in., paper-covered bulletin, 32 pp. Illus. with photographs, sketches and color plates. 25¢.

The stated purpose of this publication is "not to praise or condemn the birds of prey, but to show the part they play in nature." The introduction pleads for a better understanding of these birds. Keys for identification are followed by a one-page treatment of each of 20 species of hawks, owls and our two American eagles. A pen and ink sketch of the bird, a description, brief notes on life history,

and a food habits graph are given for each species. A circular diagram, divided into percentage segments of the various kinds of prey, is based upon stomach analyses of thousands of Pennsylvania hawks and owls examined by state food-habits technicians.

PENNSYLVANIA BIRDLIFE

By Hal H. Harrison, The Pennsylvania Game Commission, Harrisburg, Pa., 1949. 6 x 8¾ in., paper-covered bulletin, 72 pp. Illus. with photographs and color plates. 50¢.

The author of "American Birds in Color," who is also a noted bird photographer, has added a splendid contribution to Pennsylvania's literature on birds. Divided into seven chapters, this profusely-illustrated publication tells of the value of birds to mankind, how to study and attract them, bird conservation, and an engaging chapter on "Interesting Things About Birds" which includes a list of bird facts and fallacies. Includes sound advice on what binoculars to choose, bird study in schools, bird photography and a host of other practical suggestions to "bird-watchers."

BIRDS OF ROCKLAND COUNTY NEW YORK

Edited by Robert F. Deeds, Rockland Audubon Society, West Nyack, New York, March, 1949. 6 x 9¼ in., 30 pp., booklet. Indexed. 50¢.

An attractive guide and checklist for the 233 species of birds known to occur in Rockland County, parts of Orange and Westchester Counties in New York, and Bergen County, New Jersey. A compilation of bird records over 20 years by many observers and includes records for the Bear Mountain-Harriman Park. An interesting chapter, Birds Around the Year, gives typical lists of birds seen on individual trips taken in each month. In the checklist the common name of each bird is followed by its frequency of occurrence, dates of arrival and departure, and times of the year when most often observed.

TERRITORY IN BIRD LIFE

By Eliot Howard, Collins, 14 St. James Place, London, 1948. 5½ x 8 in., 224 pp. Illus. with half-tone plates. \$4.00.

A new edition of a book first published in 1920, based upon 20 years of study of territorialism in birds, and long considered a classic. The author, who died in 1940, is credited with developing a theory on bird behavior, combining observation and deduction, which will be forever associated with his name. In 28 years of study of bird territory and behavior that followed publication of the first edition, Howard's theory has been somewhat modified, but most of his original ideas have stood the test of time and of considerable work by others in the field. A volume that belongs in the library of everyone seriously interested in bird study.

BRITISH BIRDS

By Wilfred Willett, Adam and Charles Black, 4-5-6 Soho Square, London, W.1, 1948. Distributed by Macmillan Co., New York. 5¾ x 8¾ in., 196 pp. Illus. with colored plates and sketches by Roland Green. Indexed. \$2.50.

A pleasantly readable introduction to about 200 common bird species of the 500 occurring in Britain. The author, a long-experienced student of British birds, gives brief accounts of the habits of bird groups from the rook, crows and jackdaw to a concluding chapter on game birds. All chapters, which are titled by bird groups, are followed by a list of the common names of the birds in that group, with a note on each bird's length and the environment in which it is commonly found. The text discusses life histories, including call-notes, song, nesting, and other habits.

SILENT WINGS: A MEMORIAL TO THE PASSENGER PIGEON

By Aldo Leopold, et al. May be bought from Walter E. Scott, Mendota Beach Heights, Madison 5, Wisconsin, 1947. Illus. 42 pp., booklet. \$1.00.

Published by the Wisconsin Society for Ornithology, four essays are prefaced by a simple dedication to the last passenger pigeon killed in Wisconsin, and to the bird as a species. From the beautiful tribute written by the late Aldo Leopold to Schorger's account of the great Wisconsin nesting of 1871, it tells the tragic story of the persecution and decline of the passenger pigeon; also appeals for the preservation of at least 50 other North American wild creatures now threatened by extinction. A historically important contribution to ornithological literature which should be in every library and of particular significance to everyone interested in birds.

PLANTS

TEXAS FLOWERS IN NATURAL COLORS

By Eula Whitehouse, published by the author, Box 739, Southern Methodist University, Dallas, Texas, 1948. 5½ x 8¼ in., 212 pp. Illus. with color plates. Indexed. \$3.95.

An excellent guide to several hundred common wildflowers of Texas. Most species are illustrated from water color paintings by the author. Although the reproductions are not uniformly good, they are sufficiently clear to make identification fairly simple. In the main part of the book, each page has one or two flower illustrations below which the author tells where the plants are found, their family char-

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SUMMER OF 1949

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acteristics, common and scientific names, with information as to the plant's place in the garden, use in medicine and industry, and folklore.

THE FLOWERS THAT BLOOM IN THE SPRING

Compiled by John M. Price, Rockland Audubon Society, West Nyack, New York, 1949. 8½ x 11 in., 12 pp. Mimeographed pamphlet. Indexed. 15¢ each, 10 for \$1.00.

According to the subtitle: "A calendar of the blooming of 144 spring flowers in the woods, fields, swamps and roadsides of Rockland County, New York." Based upon 12 years of observations, an interesting and useful guide to the date of the first blooming of each species, presenting also in tabular form the common and botanical name of each wildflower, its color, and habitat wherein most often found.

BOTANY AND OUR SOCIAL ECONOMY

By Alexander C Martin, National Wildlife Federation, 20 Spruce Street, Boston, Mass., 1948. 6 x 9 in., 30 pp. Illus. paper-covered pamphlet. 10¢.

Dr. Martin is a research biologist of the U. S. Fish and Wildlife Service, Patuxent, Maryland. In this attractively illustrated booklet, one of the first of a series sponsored by the National Wildlife Federation, the author aims to give school teachers a better understanding of plants and their relationships to animals and man. The importance of plants in our everyday living, and to wildlife, is adequately presented, also the natural and human barriers to restoring some of our used-up plant resources. A summary describes the challenge that faces teachers in presenting this knowledge to students.

PLANTS: A GUIDE TO PLANT HOBBIES

By Herbert S. Zim, Harcourt Brace & Co., New York, 1948. 5½ x 8¼ in., 398 pp. Drawings by John W. Brainerd. Indexed. \$3.50.

To his growing list of science books, Dr. Zim has added another of interest to both the amateur and professional student of plant life. Beginning with a general view of the world of plants he presents the major problems of identifying and classifying them. There is information on how to collect, preserve, mount and label plants and how to develop hobbies with seed collections, leaf-prints, microscopic studies of pollen and even the building of a terrarium. The city dweller as well as the countryman will find plant hobbies here that he can indulge in. There are chapters on plants of the past, domestic plants, and plant localities worth visiting. A helpful list of references follows each chapter.

THE ESSENTIALS OF PLANT BIOLOGY

By Frank D. Kern, Harper & Bros., New York, 1947. 6½ x 9½ in., 440 pp. Profusely illus. with colored plates, photographs and drawings. Indexed. \$4.00.

The author, who has headed teaching and research in the Botany Department of Pennsylvania State College for more than 30 years, has written a college textbook for an elementary one-semester course. In logical sequence Dr. Kern discusses the food supply of plants, how plants use food to maintain individual life, and their reactions to their environment, proceeding to the preservation of races of plants, their dispersal and continuity from parents to offspring. There are chapters on the improvement of plants by man, the development of various kinds, and a final outline of the great groups (orders) of plants from algae to orchids.

PLANTS OF GRAND CANYON NATIONAL PARK

By W. B. McDougall, Grand Canyon Natural History Association, Grand Canyon, Arizona, 1947. 5½ x 8¼ in., 125 pp. Indexed. 50¢.

One of a series of bulletins to stimulate interest and to encourage the cataloging of the natural history resources of Grand Canyon National Park. In this third edition of the checklist of plants of that region, only those of which there are specimens in the park herbarium are included. This is not a complete list as considerable collecting remains to be done. Some 40 species of the plants listed are not known to occur anywhere in Arizona, outside the park, and seven of them are not known from any other locality in the world.

THE REDWOODS OF COAST AND SIERRA

By James Clifford Shirley, University of California Press, Berkeley and Los Angeles, 1947. 6 x 9¼ in., cardboard end covers, 84 pp. Illus. with a map and photographs. \$1.00.

The author, a Yosemite ranger-naturalist, and Professor of Botany at Phillips University, Enid, Oklahoma, spent four summers studying the Mariposa Grove of Big Trees and lecturing on them before visitors. The redwoods are the tallest, largest, oldest, and most famous trees in the world. Their ancestry goes back millions of years and connects our present era with the Age of Reptiles. The author says that of the many species that once constituted the redwood groves, only two, the coast redwood and the Sierra redwood, have survived. He traces the history of the discovery of the redwood groves from a Spanish expedition up the California coast in 1769 to the Giant Forest in Sequoia National Park, discovered by Hale D. Tharp in 1858. There are interesting chapters on

how the name sequoia was given the big trees, their distribution in California and Oregon, the fossil record, the resistance of the trees to disease and decay, reproduction, cultivation, age, and many other interesting facts. A "must" book for anyone interested in these big trees.

PACIFIC COAST TREES

By Howard E. McMinn and Evelyn Maino, University of California Press, Berkeley, Calif., 1947. $5\frac{1}{4} \times 7\frac{3}{4}$ in., 409 pp. Illus. with sketches, one colored plate, maps in end covers. \$4.00.

In his preface, the senior author, Professor of Botany at Mills College, says: "One difficulty in tree study on the Pacific Coast lies in the fact that no one book gives illustrations and descriptive accounts of both native and introduced trees. . . . This book may solve this difficulty. . . ." A general introduction describes the naming of plants, how to use the manual, botanical terms, life zones, and distribution of Pacific Coast trees. There are 130 species and 16 varieties of native trees, and about 1,000 introduced species. A key to genera is followed by a descriptive account of each tree, illustrated with sketches of fruit, leaves, twigs, or blossoms. There is a glossary of botanical terms, and a list of trees recommended for various uses.

THE LESSER ANIMALS

AN INSECT BOOK FOR THE POCKET

By Edmund Sandars, Oxford University Press, London, 1946. $4\frac{1}{2} \times 6$ in., 344 pp. Illus. with colored plates and sketches. \$3.75.

Preceding volumes of "Books for the Pocket" were aimed at treating the 200 reasonably common birds, 50 beasts, and 70 butterflies of the British Isles. Since there are more than 20,000 species of insects of 300 families in these islands, this volume is restricted to the larger insects (those which exceed half-an-inch in body length, and one inch in wing span). Thus Mr. Sandars reduces the number of insect families dealt with to 130. The book is an aid to identification, and the text is concerned with habits and life histories rather than anatomy.

THE INSECT WORLD

By Hilda T. Harpster, The Viking Press, New York, 1947. $5\frac{3}{4} \times 8\frac{1}{2}$ in., 211 pp. Illus. and indexed. \$3.00.

A popularly written account of insect life which introduces the reader to some of the most inter-

esting creatures on earth. The author, a graduate of Sweetbriar College and The University of Michigan, is an entomologist and Professor of Biology at the University of North Carolina. There are chapters on how insects grow, their mouth parts and how they feed, insect plagues and their causes, how insects breathe, defend themselves and build homes. An appendix lists the orders of insects, their characteristics and where to find them. A bibliography and unusually fine illustrations by Zhenya Gay.

AMPHIBIANS AND REPTILES OF THE PACIFIC STATES

By Gayle Pickwell, Stanford University Press, Palo Alto, California, 1948. $7 \times 10\frac{1}{4}$ in., 236 pp. Illus. with photographs. Indexed. \$4.00.

Gayle Pickwell, Professor of Zoology, San Jose State College, San Jose, California, author of a series of books on natural history, spent 18 years collecting western amphibians and reptiles as a basis for this work. All species which occur in Washington, Oregon and California (the Pacific States), are treated. Chapters on differences between each species and subspecies, and their distribution, are followed by sections giving life habits, collecting and handling of live specimens, and their care in captivity. Dichotomous keys, the so-called—"either, or" type, make up the appendix. There is a glossary of terms, and an extensive bibliography. A well-written, attractive book that should fill a need for an introduction and a good regional reference to these animals.

REPTILES AND AMPHIBIANS OF THE NORTHEASTERN STATES

By Roger Conant, Zoological Society of Philadelphia, Pennsylvania, 1947. $9 \times 11\frac{3}{4}$ in., paper-covered bulletin, 40 pp. Illus. with photographs and sketches. Indexed. \$1.00.

The author, an authority on this group of animals and a curator at the Philadelphia Zoo, has written a beautifully-illustrated, non-technical bulletin which is an admirable introduction to the snakes, lizards, turtles, toads, frogs and salamanders. Written for the constantly-growing army of persons interested in these creatures, and for Boy Scouts, science teachers and nature enthusiasts in general, every species known to occur in the northeastern states is illustrated. A check list of species and their ranges is followed by articles on the usefulness of snakes, first-aid for snake bite, and brief life histories of snakes, frogs and other reptiles and amphibians. A concluding chapter gives an illustrated account of caring for captive specimens; also an excellent list of handbooks and other references.

A HISTORY OF FISHES

By J. R. Norman, A. A. Wyn, Inc., New York, 1948. 5½ x 8½ in., 463 pp. Illus. with drawings, maps and photographs. Indexed. \$6.50.

This excellent book, first published in 1931, has been reprinted and is now available to American readers. The late author was Assistant Keeper of the Department of Zoology of the British Museum, and presents in clear readable style a vast amount of useful information for both the layman and professional ichthyologist. There are interesting chapters on what is a fish, the number of different species in the world, their forms and methods of swimming; how fishes breathe, their different kinds of fins, mouths and jaws, teeth and food, poison glands and electric organs; luminous and sound-producing fishes; and even a chapter on their myths and legends. This is a volume long-recognized by professional ichthyologists as a fine introduction to the study of fishes. A list of references adds to its usefulness.

WILDLIFE MANAGEMENT

PROFESSIONAL OPPORTUNITIES IN THE WILDLIFE FIELD

By David B. Turner, *Wildlife Management Institute, Investment Building, Washington, D. C.*, 1948. 6 x 9 in., paper-covered bulletin, 208 pp. Indexed. \$1.00.

Just before the recent war, and after it was ended, thousands of employment inquiries and hundreds of applications flooded federal and state fish and game departments. Most of the inquiries came from young men in their teens, wanting to know what chances there would be for wildlife employment after the war, what kind of jobs there would be, what academic qualifications were required for them, which colleges and universities gave training in biology and conservation, and what was the relative rating of these institutions. The federal and state wildlife departments could not always answer these queries. Now this information is available in a handy-sized, reasonably-priced publication. The author, who spent more than a year on the work, personally visited colleges, universities, and federal and state game departments throughout the United States and Canada to gather the data contained in this report. It is divided into four sections—Individual Training, Institutions, Federal Employment, and State and Province Employment, with a general summary and conclusions. Among the many useful things given are lists of the courses essential to training in wildlife management, colleges and universities of the U. S. and Canada offering degrees in wildlife man-

agement, or fisheries work, professional and sub-professional positions in the U. S. Fish and Wildlife Service, U. S. Forest Service, Soil Conservation Service, and Canadian agencies, and those of States and Provinces. There is an appendix giving detailed histories of wildlife work, curricula and the courses of 34 universities and colleges in the U. S. and Canada. A great public service has been done in compiling this report. Anyone who knows of a youth who is interested in wildlife work as a career, will do him a service by calling his attention to this bulletin.

OUTLINE OF THE MANAGEMENT OF FUR ANIMALS

By Warren W. Chase and Elizabeth B. Beard, *The Overbeck Company, Ann Arbor, Michigan*, 1948. 8½ x 11 in., 46 pp., paper-covered bulletin. \$1.75.

Another of a series, *Teaching Aids in Wildlife Management*, by a professor of wildlife management and his assistant at the School of Forestry and Conservation, University of Michigan. For college teachers and students, the outline is divided into 28 units so that each will cover one class period of about 50 minutes. Each unit has an outline of subject material to be studied in sequence, followed by questions and a list of mammal references on which each unit outline of study is based. Study outlines go from the biology of fur animals, physiology and fur characteristics to life histories, the fur trade and its history to management methods, environmental control and a host of other problems.

WILDLIFE MANAGEMENT

By Reuben E. Trippensee, *McGraw-Hill, New York*, 1948. 6¼ x 9¼ in., 479 pp. Illus. with photographs, sketches, maps and graphs. Indexed. \$5.00.

The author, Professor of Wildlife Management at the University of Massachusetts, and well-known for his studies of the cottontail rabbit and other game species, has taught wildlife management for more than a decade. His stated purpose in writing this textbook is to summarize and evaluate the wealth of wildlife management data gathered during the past 10 years by the researches of colleges, universities and of our state and federal governments. The first three sections of the book—Farm Wildlife, Forest Wildlife, and Wilderness Wildlife—give life history, ecology and management of species from the cottontail rabbit, squirrels, and bobwhite quail, to grouse, grizzly bears, elk, the pronghorn antelope, and many others. There is an extremely interesting chapter on the diseases and parasites of wild animals. Under Section IV, *Miscellaneous Wildlife Relationships*, the variations in wildlife populations are discussed, with a sensible

treatment of predatory relationships that should be read by all farmers and sportsmen and by people interested in feeding songbirds, who remain unaware, or unconvinced, that predation is a natural and necessary phenomenon.

NATURAL HISTORY HANDBOOKS

FIELDBOOK OF NATURAL HISTORY

By E. Laurence Palmer, Whittlesey House, McGraw-Hill Book Co., Inc., New York, 1949. 6¼ x 9¼ in., 664 pp. Illus. with photographs and line drawings. Indexed. \$7.00.

Dr. Palmer, Professor of Nature and Science Education at Cornell University and a director of the National Audubon Society, is a nationally known leader in nature education, well-known in the schools of New York State for his famous Cornell Nature Leaflets. This book is for those people who find much of our natural history literature too technical and highly specialized.

The book is broad in scope, with sections on stars and constellations, minerals, plants and animals. Black-and-white star charts make up a small section in the forepart of the volume. In the mineral, plant and animal sections there are illustrations at the top of each page below which a columnar text gives physical description, range, ecology, and usefulness of each form illustrated. The material includes those things which have most interested the author, his students and his friends during Dr. Palmer's 33 years of teaching field natural history from New England to Hawaii. The line drawings are beautifully reproduced and are an extraordinary feature of this fine book.

THE AMATEUR NATURALIST'S HANDBOOK

By Vinson Brown, Little Brown & Co., Boston, Mass., 1948. 4¾ x 7 in., 475 pp. Drawings by Don Greame Kelley. Indexed. \$3.50.

The author, a graduate of the University of California, is well-known on the Pacific Coast for his work in interesting people of all ages in nature study. A fine introduction tells what nature study is, and the ideals of a naturalist. Sections are prepared for the beginner and on through to the advanced naturalist. There are chapters on special animal and plant studies and their collection, rocks and minerals, climate study, the trail of the naturalist, and the classification of animals and plants. A feature is an extensive list of recommended nature books and periodicals for widening the reader's knowledge.

"SEAL ISLAND"

A movie short by Walt Disney is recommended by our Photo and Film Department

This fascinating live-action film short of 27 minutes tells the life story of fur seals in the fogbound Pribilof Islands, from the time when the bulls arrive in early May to select sites for summer homes, until the approach of fall when the entire herd sets out on its long migration into the Pacific. The narrative is entertaining and informative; the musical score adds amusing commentary.

This film is worth seeing, not only as an authentic story of wildlife in the far north photographed in its natural setting, but also as excellent background material for understanding some of the problems involved in wildlife conservation. "Seal Island" was released this year and is distributed by R.K.O. Radio Pictures.

—DOROTHY DINGLEY and
RUTH MARGARETTEN

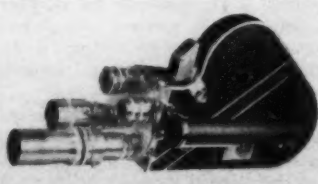


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ened bread crumbs, but drank the milk with considerable relish. Trying him later on dry bread crumbs, I found he had no objection to them at all, and liked the crust particularly. Whenever crumbs appeared, Smoky held his beak wide open and before long he had both Bob and me trained to put crumbs into his mouth. He obviously much preferred being fed this way even though he was far too big for such baby ways.

When he came into our lives he was able to fly, although the downiness of his head plainly showed his youth. His wing and tail feathers were not too well developed, and the tail feathers had a way of coming out. Just in time, of course, new ones came in—much bigger and stronger ones—and by the middle of September, Smoky had a proper catbird tail.

From eight to nine each morning was my hour for gardening. In this pursuit, Smoky was my unfailing companion, never missing a morning. I would pull a weed or draw my fork through the 'earth and then wait while Smoky disposed of the insect life. Ordinary grubs were satisfactory, and ants, when nothing better showed up. Occasionally I would find something that he failed to see and my efforts at imitating a mother bird's anxious feeding calls were probably extremely ludicrous. I chirped—I coaxed—I all but fluttered my arms. Smoky understood perfectly what this odd performance meant; he had a wilful streak, though, and wouldn't always mind.

When he had had enough he would wander off for a short time—frequently upon my back, which made a fairly flat surface to wander about on as I worked there on hands and knees. If I walked about the garden, he perched on my head or shoulder and learned to stay on as I walked.

As he grew older Smoky's diet changed. Beetles, which involved a real chase, interested him more than the dull grubs, although he liked the big Japanese beetle larvae. Crickets also pleased him. He no longer ate his tomato with quite the same enthusiasm, but small amounts of fruit and vegetables were still welcome.

One of our problems was Smoky's insistence on his pre-eminent right to the outdoor fireplace. This had been one of his favorite spots ever since we put one of the original tomatoes beside it. My approach to the fireplace, hence, was a signal for Smoky to come too. When I started a fire my wilful bird insisted on flying right into it. I used to sneak out when he wasn't around to get my litter burned—all to no avail. The sign of smoke would call him and after he evaded my outstretched hands one day and landed on some glowing coals, I gave up trying to burn anything in the outside fireplace.

The reactions of other birds to our companion-

ship with Smoky were interesting. Generally, our joint weeding operations were done to the accompaniment of anxious chirpings and warning calls from other birds which, however, seemed not to bother my catbird at all. A neighbor told us, that one day when Smoky was perched on her shoulder, a cardinal had become so agitated that he flew past her face repeatedly, so close that she thought he was going to attack her. It was curious that a bird of another species should go to such limits to effect a "rescue."



Smoky himself was for weeks oblivious to the excited calls of other birds. In September, however, he began to notice other catbirds, two of whom took to frequenting the garden, evidently because of his presence here. One day, when he had just begun to eat some grapes which I was holding for him, a catbird called insistently from the rooftop. After a moment's struggle between his desire for the grape and his new interest, Smoky was off after the other bird. Some times

a teasing catbird would call and then fly off. Smoky, ready to follow, would call and call without receiving any answer. I would then go out to comfort my slighted bird.

Finally, these pleasant weeks came to an end. The first break came one morning early in September, when he failed to show up for our daily weeding. I worked on alone—feeling heartsick for fear a cat had caught him. Throughout the morning I hunted and called for him without success. Finally, in mid-afternoon, Smoky appeared on the fence looking as cool as a cucumber—as if nothing had happened. He refused to come near me, however, and throughout the week, remained aloof. He left the silver maple for a home in a different backyard, though he came to us for a few minutes each day.

Then we noticed another change in his behavior. His visits became more frequent, and he announced his coming imperiously, clinging to the porch screen and demanding attention. As soon as I set foot outside he would fairly catapult himself into my hand and eat whatever I held—but only if I held it. If I put it down he was no longer interested. Hitherto he had preferred to eat on the ground; but now his main interest was in feeding from our hands—not in getting food.

Apparently, like many youngsters, he had been eager to try his wings—to get out from under the parental roof. Having found that he was free to go, he came back to us with more show of attachment than ever before.

After the education that Smoky gave us, I no longer wonder that in the old fairy tales small birds were often transformed into enchanted princes. But the world being what it is, I suppose Smoky will remain a catbird.

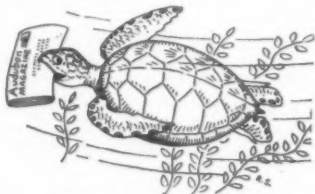
Books Received at Audubon House

- BEARD, WARD P. *Teaching conservation*, American Forestry Assn., Washington, D. C., 1948. \$1.50.
- BENSON, L. and DARROW, R. A. *Manual of south-western desert trees and shrubs*, University of Arizona Bulletin, (Biological Science Bulletin No. 6), Tucson, April, 1944.
- BISHOP, CURTIS. *Lots of land*, Steck, Austin, Texas, 1949. \$3.00.
- BROCKMAN, FRANK. *Flora of Mount Rainier National Park*, Government Printing Office, Washington, D. C., 1947. 75¢.
- CHASE, GREENLEAF and SEVERINGHAUS, C. W. *Winter deer feeding*, New York State Conservation Department, Fish and Wildlife Information Bulletin No. 3, New York, 1949.
- CLEMENTS, EDITH S. *Flowers of prairie and woodland*, H. W. Wilson, New York, 1947. \$2.25.
- COLLETTE, ELIZABETH. *Writers in America*, Ginn and Company, New York, 1949. \$15.00.
- CURTIS, BRIAN. *Life story of the fish*, Harcourt, Brace, New York, 1949. \$3.75.
- DENCE, W. A. *Life history, ecology and habits of the Dwarf Sucker, Catostomus commersonnii Utawana (Mather), at the Huntington Wildlife Station*, (Roosevelt Wildlife Bulletin, Vol. 8, No. 4), State College of Forestry, Syracuse, New York, Vol. 2, No. 3, June, 1948.
- DE ROOS, ROBERT. *The Thirsty land; the story of the Central Valley project*, Stanford University Press, Stanford, 1948. \$4.00.
- FURON, RAYMOND. *L'érosion du sol*, Payot, Paris, 1947. \$3.75.
- GALL, ALICE. *Winter flight*, Oxford University Press, New York, 1949. \$2.50.
- GEORGE, JOHN L. *Vision the mink*, Dutton, New York, 1949. \$2.50.
- GIBSON-HILL, CARL A. *The brown booby*, (Reprinted from the Malayan Nature Journal, Vol. III, No. 2, June, 1948).
- GIBSON-HILL, CARL A. *Field notes on the birds of Christmas Island (Indian Ocean)*, (Reprinted from the Bulletin of the Raffles Museum, Colony of Singapore, No. 18, October, 1947).
- GIBSON-HILL, CARL A. *The Island of North Keeling*, (Reprinted from The Journal of the Malayan Branch, Royal Asiatic Society, Vol. XXI, part I, April, 1948).
- GIBSON-HILL, CARL A. *The Malayan Frigate-birds*, (Reprinted from the Malayan Nature Journal, Vol. III, No. 3, September, 1948).
- GRASS: THE YEARBOOK OF AGRICULTURE, 1948. Government Printing Office, Washington, D. C., 1948. \$2.00.
- GREAT BRITAIN. MINISTRY OF WORKS. COMMITTEE ON BIRD SANCTUARIES IN THE ROYAL PARKS, (ENGLAND AND WALES). *Birds in London, Report, 1939-1947*, London, H.M.S.O., 1948.
- GUSTAFSON, A. F. *Conservation in the United States*, 3rd edition, Comstock, Ithaca, New York, 1949. \$5.00.
- GUSTAFSON, A. F. *Using and managing soils*, McGraw-Hill, New York, 1948. \$2.80.
- HANNA, ALFRED JACKSON. *Lake Okeechobee; well-spring of the Everglades*, Bobbs-Merrill, New York, 1948. \$4.00.
- HAUSMAN, ETHEL HINCKLEY. *Beginner's guide to wild flowers*, Putnam, New York, 1948. \$3.50.
- HAUSMAN, LEON A. *Beginner's guide to seashore life*, Putnam, New York, 1949. \$2.00.
- HOSKING, E. J. and NEWBERRY, C. W. *The art of bird photography*, Transatlantic Arts Inc., New York, 1948. \$3.75.
- HOUSSE, ÉMILE. *Les oiseaux du Chili*, Masson, Paris, 1948. \$4.50.
- HIGMAN, HARRY W. and LARRISON, E. J. *Pilchuck; the life of a mountain*, Superior Publishing Company, Seattle, 1949. \$3.50.
- HOLDSWORTH, JOHN B. *Birds of Zavala County (Texas)*, No imprint.
- JOHNSON, GRACE PETTIS. *Birds of Springfield, Massachusetts and vicinity*, 7th edition, Museum of Natural History, Springfield, Mass., Bulletin No. 5, 1946.
- KEITH, SIR ARTHUR. *A new theory of human evolution*, Philosophical Library, New York, 1949. \$4.75.
- KJELGAARD, JIM. *Kalak of the ice*, Holiday House, New York, 1949. \$2.50.
- LANCUM, HOWARD F. *Wild birds and the land*, (Great Britain Ministry of Agriculture and Fisheries, Bulletin No. 140) H.M.S.O., London, 1948. (Available through the British Information Services, 30 Rockefeller Plaza, New York.) 90¢.
- MC FARLAND, HORACE J. *Memoirs of a rose man*, Rodale Press, New York, 1949. \$3.00.
- MASTERS, ROBERT V. *Child's garden of flowers*, Greenberg, New York, 1949. \$1.00.
- MASTERS, ROBERT V. *Child's garden of vegetables*, Greenberg, New York, 1949. \$1.00.
- OEHSER, PAUL H. *Sons of Science*, Henry Schuman, New York, 1949. \$4.00.
- ONRAET, TONY. *Sixty below*, Didier, New York, 1948. \$3.00.
- PETERS, JAMES LEE. *Check-list of birds of the world*, Vol. VI, Harvard University Press, Cambridge, 1948. \$6.50.
- SHIPPEN, KATHERINE B. *Great Heritage*, Viking Press, New York, 1948. \$3.50.
- STRINGHAM, EMERSON. *Kerrville, Texas and its birds*, Pacot Publications, Box 986, Kerrville, Texas, 1948. 50¢.
- THORNTON, JAN. edit. *The sportsman's companion, or an essay on shooting*, Stackpole and Heck, New York, 1948. \$10.00.
- TITMUS, F. H. *Concise encyclopedia of world timbers*, Philosophical Library, New York, 1949. \$4.75.
- TUNNICLIFFE, CHARLES F. *Mereside Chronicle*, Scribner's, New York, 1949. \$15.00.
- WAGNER, H. O. and LENZ, H. *El bosque y la conservacion del suelo*, Editorial Cultura, Mexico, 1948. \$4.00.

Letters

FROM THE EDITOR

Perhaps editing from a sick bed isn't *too* successful a substitute for the more conventional method of editing from an office desk. At any rate, it hasn't worked well in so far as our deadlines are concerned—what with the March-April issue coming out during the last part of May, and May-June arriving about the middle of July!



In the good old days when I was on my feet, I stormed and fumed and breathed fire from my nostrils at deadline time. Audubon House laughed good-naturedly—but the magazine *did* get out during the months named on the issue, at least!

At first I was a little disconcerted when I found that a card had been mailed to our readers saying that the magazine was late due to illness of the editor. But I know you understand that our editorial staff is small; that if we had a complete full-time staff, such as the bigger publications do, *Audubon Magazine* would have come out on time no matter what happened to the editor!

We're doing our best to catch up. Ken Morrison came all the way from Minneapolis to give us ten days of help and John Terres, true friend of the magazine, has dropped other work to devote full time as an Associate Editor. Fred Hahn, our layout man, and Andy Bihun, secretary, have taken hold like experienced veterans although both are more or less new on our staff.

However, the mailing of that card brought in a completely unanticipated response—readers from North, East, South and West—many people I'd never heard of before sent messages of sympathy, "get-well" cards and *praise* of "their favorite magazine."

As you can imagine, those messages — so sincere and from the heart — did more for me than the surgeon's knife or medication, the stock-in-trade at the hospital! How sorry I am that there is no way to express my gratitude in words—if I could only clasp your hand and look into your eye and say "thank you," then you could *feel* the depth of my appreciation for what you have done for me!



About this issue's authors: Paul F. Runge is Assistant Scout Executive of the Atlanta Area Council, Boy Scouts of America, and has served as director of several Scout camps.

Samuel A. Thorn retired from teaching last September and is now having a wonderful time roaming—seeing nature in all her different moods throughout the United States. He was in Florida in May but by now is on his way to the southwest coast of Oregon where he hopes to spend at least a year.

"I found many queer creatures here in Florida," he writes, "even to the legless lizard (the so-called glass snake). Heard all the native folklore about this 'critter'—it makes quite a story, even to landing me back into teaching during the last three months of the school term."

Mathilde Henkel is a native of Minnesota, born and reared where forest meets the prairie and near the Mississippi with its fabulous flyway, "so that I just naturally became interested in birds at an early age. At present I am teaching in a Detroit high school. Summer vacations have made it possible for me to observe birds in 40 states—but part of every summer is spent in Minnesota, preferably in Itasca!"

Charlotte Orr Gantz (Mrs. Robert Gantz) lives on a 75-acre farm in Bucks County, Penna. "We are trying to build a bird sanctuary here and received excellent advice on planting from your warden at the Roosevelt Memorial Sanctuary at Oyster Bay, Long Island." Mrs. Gantz practiced law in New York City before she was married and was Assistant Corporation Counsel in the City Law Department.

The Christmas Bird Count of 1945 became a red-letter day in the Gantz family. At that time they were living in Arlington, Va., and had been asked to join the count conducted by the Audubon Society of the District of Columbia. They had been looking forward to the jaunt—but found themselves making a very exciting Boy Count instead. The stork arrived with twins on that memorable day!

Perseverance *does* win out! For seven years we have "pestered" the Murie brothers to write for Audubon readers. Remember that in 1948 we finally won out? Adolph wrote "The Mysterious Mouse" for our July-August issue and Olaus wrote "Wonder Dog" for our September-October issue. Our letters pursue Olaus—even into the bush in New Zealand. "New Zealand—A First Impression" was mailed to me by his wife who wrote: "Olaus said to tell you that he was keeping his promise to

send you something from New Zealand although this was written in a wet, cold tent surrounded by wet bush and the rain was pelting down."

She writes further: "Here is a brief bare outline of the background of this trip. The Expedition is a cooperative one put on by the New Zealand government and the American government to the extent that Olaus is operating out here under a Fulbright Grant from our State Department and Col. John K. Howard is representing the Museum of Comparative Zoology at Harvard University. The main cost of the Expedition is borne by New Zealand.

"The object is to make a fairly complete biological and geological survey of the whole Fiordland area, with special emphasis on the wapiti and red deer. This last is Olaus's special project but he has also directed all the scientific work."



It is no longer the fashion for an editor to address the reader as "dear reader." But, believe me, the heart-inspired sentiment that gives meaning to the phrase holds good, even in these brittle times. There is a personal warmth, especially in our Society between reader and editor. And so, dear reader, let me thank you again for those cheerful messages. E.A.K.

TO THE EDITOR

A "Conservationist's Philosophy" by Alexander F. Skutch expresses thoroughly the sentiments I have wished to express for years.

Wish the article might be printed separately so one might purchase it to be presented at many local organizations.

Under your guidance *Audubon Magazine* is informative, instructive and all together very worth while.

MRS. ALBERT SMITH

Watkins Glen, New York

The Jan.-Feb. issue was snatched up by my wife, who would not rest until I had clipped the Peterson pictures and framed them. I have to admit that they make a beautiful pair as they hang in a corner of our dining room.

LOUIS FINK

Rutherford, New Jersey

As a Zoology major at Montana State University, I am kept constantly on the go in classes and beside the midnight oil-lamp, but one good method for relaxation, I have found, is to leaf through *Audubon Magazine* and read or reread the many

fascinating stories told by your Society's friends and workers. May I say that Mr. Alan Devove's selection "Why Bother" (Nov-Dec 1948) should not only be read by Audubon enthusiasts but also presented as a guide to those persons ignorant of the compatibility which must exist between man and his natural environment, a compatibility so necessary for a worth-while, meaningful life. It is with intense pride that I am able to bring *Audubon Magazine* and the Society's work to the attention of my friends in Missoula. I only hope that some of my efforts will be rewarded by their active interest and support.

RICHARD H. JACKSON

Missoula, Montana

I wish to call your attention to a flagrant mistake on page 132 of your latest issue. The author of "Indiana Birds" is named Hadley and not Bradley! I am also surprised that you consider it "a fine introduction to the more common birds of Indiana." The mockingbird, for example, is not common at all, yet the author includes that one and leaves out both the catbird and the brown thrasher which are familiar to every city dweller. Moreover, why the author chooses to include six different kinds of owls and seven different kinds of hawks in a list of only 48 birds, and then omits to mention the very familiar wood thrush which sings in every Indiana wood and almost every city street (judging from Indianapolis)—why he does this, I repeat, is beyond my comprehension.

The common and very familiar house wren is also omitted, while the Carolina wren which is not half so well-known is listed!

The field sparrow should have been added to the two sparrows listed, to my mind—it sings from every field in Indiana!

ELISABETH L. HAERLE

Indianapolis 8, Indiana

(We regret our error in proofreading and are glad to have it cleared up by Miss Haerle.

Mr. Hadley's pamphlet does impress us, as we said, as a "fine introduction to the more common birds of Indiana." Naturally an incomplete selection of the more "common birds" of any state is bound to draw forth a protest over the inclusion of certain common ones over others which are necessarily omitted for lack of space.

We would like to point out that our book column is not written as a critical review, but as a service to our readers to help them keep up to date on what is being published in natural history and conservation. We mention what each contains and its authority, presenting as much information as space allows. Then the reader can investigate the book further on his own account, if the publication interests him.

J.K.T.—Book Notes Editor)

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- LOST: PART OF A CONTINENT** 8 pp. 10¢
By Robert P. Allen. Describes the search for the unknown nesting grounds of the whooping crane in the Far North. Illus.
- CITY FOLKS NEED ROOTS IN THE LAND** 8 pp. 10¢
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- A FOOT-NOTE TO RIDGWAY** 8 pp. 10¢
By Guy Emerson. Contains valuable suggestions for clubs on how to compare present bird records with historical ones that may be available for your area. The area under discussion here is Parley's Park in Utah. Illus.
- HOW TO TAKE A BREEDING BIRD CENSUS** 8 pp. 10¢
By Richard H. Pough. Illustrated with drawings.
- THE GREAT COMPANIONS OF NATURE LITERATURE** 4 pp. 5¢
A 100 volume nature library selected by Edwin Way Teale.
- ROOSEVELT MEMORIAL BIRD SANCTUARY** 8 pp. 5¢
By John H. Baker. The story of our 12-acre songbird sanctuary at Oyster Bay, Long Island. Illus.
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By Dave Cook. Illustrated by Walter J. Schoonmaker.
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- IS IT WISE POLICY TO INTRODUCE EXOTIC GAME BIRDS?** 20 pp. 15¢
By Ralph T. King. A thoroughly documented discussion of the dangers involved in introducing such foreign species as ring-necked pheasants, Hungarian partridges, etc. Illus.

NATIONAL AUDUBON SOCIETY

Continued from page 161

population declined 50 per cent in a week; in Maryland a similar operation resulted in a 65 per cent reduction. This sort of thing carried out on a large scale could have catastrophic results. What is happening is that too many people are reasoning, with an American faith in bigness, that if one pound of DDT is good two pounds must be better. Birds feeding on bugs poisoned by insecticide applications in excess of recommended quantities soon die.

Perhaps it is not so surprising after all that the Audubon and Curran warnings have been taken lightly. As a nation we sometimes exhibit a child-like belief that, no matter what the prophets of doom say, everything is going to come out all right. Are our forests being depleted through improper cutting practices? We see trees still coming to market; therefore conditions cannot be as bad as reported. Is our petroleum being consumed at an unprecedented rate? As long as there appears to be plenty of it our concern is distant.

Crisis Yet to Come

The truth is that with the exception of the passenger pigeon we permitted to be annihilated and the buffalo that came perilously close to extinction we have been singularly fortunate in being able to cling to a fair portion of our animal and mineral wealth, and we have yet, in spite of dire predictions and waste, to come up against an obviously serious threat to the nice equilibrium of nature that permits us to remain on this planet. In time, at present rates of resource consumption, some sort of crisis is inevitable. A turning point might well begin not with an exhaustion of ores, soils or forests but in an unsuspected quarter among things we regard as being too frail to have much effect on our own fortunes. It may be we underestimate our smaller fellow inhabitants of the globe.

Solution to Surplus

Potato bugs, if unmolested by their natural enemies and by man, would speedily put an end to the problem of potato surpluses, replacing them with critical shortages, for one potato bug in a single season is capable of producing sixty million hungry descendants. Some plant lice do even better; females of the species produce only about fifty young at a time, but thanks to a short life cycle there may be as many as thirteen generations of plant lice in a season. Under ideal conditions there would be something like ten sextillion lice in the thirteenth generation. Were man to lose birds as his allies in the war against insects he would find himself in no time fighting a desperate last-ditch battle for survival.

Wren at Work

If this appears to be improbable to those of us whose knowledge of birds is limited to pigeons and

sparrows, which seem to thrive on a diet consisting largely of peanuts and bread crumbs, consider the incredible capacity of the flicker, whose crop has been found to contain a thousand chinch bugs at a time, or the nighthawk which may catch as many as five hundred mosquitoes for one meal. A wren has been known to feed its young 1,200 times between dawn and dusk and undoubtedly, although the report on this airlift operation does not say so, found time to sing a few notes between trips.

Tipping the Scales

There are said to be 25,000 kinds of flies in this country, most of which either are harmless or prove useful in pollinating flowers and destroying injurious insects. In our zeal to kill off the five hundred kinds that are harmful or annoying we seem to be making progress toward eliminating all 25,000, upsetting nature's balance to a serious degree in so doing.

What the Audubon Society and Dr. Curran are saying is that unless new insecticides are used carefully not only may we find our wild life vanishing at a startling rate but also in our life-time we may see our *modus vivendi* severely shaken up. To be sentenced to live in a world where no birds sing is too great a punishment, even for fools.

• • •

Reprinted from the New York Times.

Scientific Use of DDT

Trend to Moderation Believed Ending Danger to Bird Life

To the Editor of The New York Times:

The comments in the column Topics of The Times May 2 relative to the improper use of DDT and other of the new and powerful organic insecticides were of great interest to the many private and government shade tree and mosquito-control people who have been troubled by the avalanche of conflicting claims and recommendations dealing with the post-war spraying materials.

In the course of my work with spray materials and equipment, advising proper formulations for cities and towns in the Eastern United States, I have been close to the development of the new materials and the results obtained therefrom.

There is no doubt in my mind that too high percentages, or concentrations, of DDT were recommended in the period immediately after DDT was introduced to the general public. For instance, a 25 per cent DDT emulsion was actually recommended in 1946 for the control of elm leaf beetles on American elm trees, using the conventional hydraulic sprayer and applying the same general dosage, in gallons, as was recommended with such pre-DDT stomach poisons as arsenate of lead. This

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recommendation meant that on a large elm requiring twenty-five gallons of spray material some forty or fifty pounds of actual DDT were applied to the foliage!

Earlier Dosage Rate

The accepted method at present in elm foliage spraying is the application of a DDT emulsion or solution, not exceeding 5 per cent in concentration, in "mist" or "atomized" form, in amounts ranging from one quart to six or seven pints per tree. For the pre-foliar elm spraying as protection against the scolytus, or elm bark beetle, the carrier of Dutch Elm Disease, a 12 per cent emulsion is recommended in higher per tree quantities. In no case, however, does the current recommended dosage approach the formidable proportions of the 1946 recommendation.

There is no doubt but that unnecessary damage was done to birds and useful predatory insects in the early period of DDT spraying. That the damage has been lessened is an accepted fact since the reduction of DDT applications. For example, the United States Department of Agriculture has proved that complete control of Gypsy Moth depredations can be secured by spraying one pound of DDT per acre as against the five to ten pounds per acre formerly used with sad consequences to bird life. Significantly enough, the control of undesirable shade-tree leaf feeding insects, mosquitoes, and other pests, has become more effective with the lessening of DDT concentrations and dosages.

DDT seems to have brought some serious problems, particularly in the orchard field, such as the rapid building of spider mites and aphids. This difficulty is being eliminated through the proper use of acaricides and aphidicides combined with DDT or used alone at the proper time.

The experimental DDT spraying done in Greenwich, Conn., over the past three seasons and described in a recent article in *THE TIMES* Sunday edition by Joseph A. Dietrich, Superintendent of Parks and Trees in Greenwich, is going a long way toward stabilizing the DDT spraying field.

Proper Application

DDT is not the "perfect insecticide" any more than streptomycin is the perfect antibiotic or that neomycin or aureomycin will prove to be the perfect antibiotic. However, DDT, properly used and combined with necessary "contact" materials, is a better-than-good insecticide and should not be hastily discarded simply because its use in dangerously high concentrations and dosages brought some ill effects to wild life. It should not be used at all in dairy barns any more than arsenate of lead.

Too much was expected in the beginning of DDT and the material could not possibly live up to the claims for perfection. The British insecticide

"BHC" was introduced a few years ago with similar rabid claims for its efficacy until the unfortunate practical discovery was made that potatoes from plants which had been saturated with BHC were thoroughly unpalatable.

We are a nation of enthusiasts and our biological and horticultural scientists are no exceptions to this rule. I predict that the 1949 DDT recommendations will be satisfactory in so far as the protection of bird life is concerned.

EDWARD A. CONNELL

Stamford, Conn., May 3, 1949.

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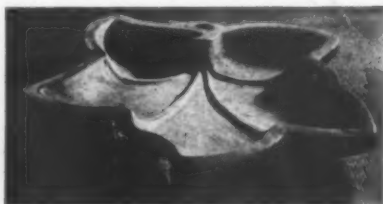
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